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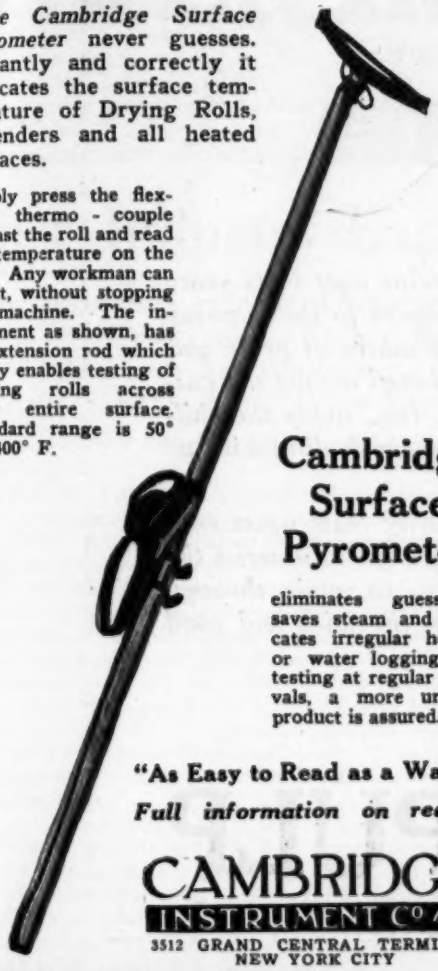

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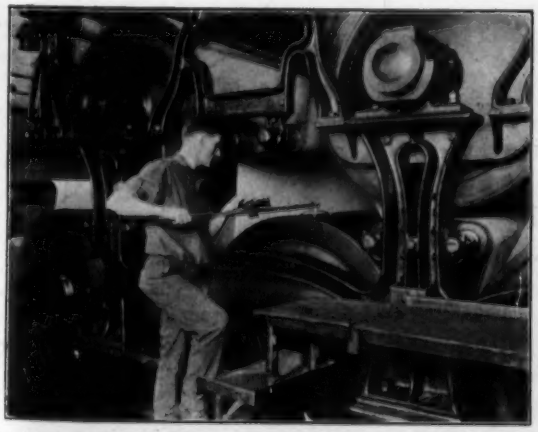

Testing the Temperature of Dryer Rolls with the Cambridge Surface Pyrometer

PAPER TRADE JOURNAL

ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-SIXTH YEAR

Published Every Thursday by the

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PAPER TRADE JOURNAL

With Which Is Combined

Vol. LXXXVI, No. 8 PAPER Thursday, February 23, 1928

Paper Industry Experiences Fairly Good Year

Volume of Business Transacted Was Satisfactory But the Undertone of the Market Was Easier, Due to Over-Production in Various Branches—Total Increased Capacity Estimated at 700,000 Tons—New Machines to Be Installed Will Further Increase Capacity By 250,000 Tons—Paper Exports Valued at Highest Figure Since 1921

Written Especially for the Annual Number of the Paper Trade Journal by H. J. Laughton

WHILE the past year in the paper industry was not quite as prosperous as the preceding one, the total volume of business transacted spread out over the twelve months, was second only to the record year of 1926. Over-production in many branches of the industry, however, made it rather difficult for the manufacturers to maintain quotations at levels justified by capital investment and cost of manufacture, with the result that prices, in many instances, registered slight declines.

Paper making machinery manufacturers report that 29 new machines, with a daily capacity of 1,374 tons, were installed in the United States in 1927, representing an increased capacity for the industry as a whole of 426,000 tons a year. There were also numerous increases to capacity by improvements and betterments in existing machines.

Total increased capacity for 1927 is estimated to be approximately 700,000 tons. However, the total volume of production showed very little change over the output produced in 1926, which indicates that 23 per cent of the capacity was idle. Orders already placed for 1928 comprise thirteen new machines, which will further increase the capacity by 250,000 tons.

According to the Department of Commerce, the value of paper and paper products imported into the United States for the past year was $149,365,343, compared with $139,499,144 in the corresponding period of 1926. Raw materials valued at $113,632,210 were also imported, compared with $121,505,691 in 1926. Paper and paper products exported from the United States last year were valued at $26,975,670, compared to $26,829,736, which is the highest figure attained since 1921.

Financial Situation Sound

According to a survey of business and financial conditions for 1927 made by the Federal Reserve Board, the volume of member bank credit in use increased rapidly during 1927, the growth being largely in investments and in loans on securities, since, owing to the smaller volume of business and the lower level of commodity prices, there was no increase in the demand for loans to finance trade and industry. Reserve bank credit outstanding throughout the year was influenced chiefly by the effects of international gold movements.

In the early months of the year, large gold imports were used by member banks to reduce their indebtedness at the Reserve banks and the volume of Reserve bank credit declined considerably below the level of 1926. From May to the end of the year, however, gold exported and earmarked for foreign account far exceeded gold imports, with the consequence that there was an increased demand for Reserve bank credit, and at the end of the year total bills and securities of the Reserve banks were in larger volume than at any time in the past six years.

The growth in Reserve bank credit, however, was met by the Reserve banks largely through the purchase of securities in the open market, so that borrowing by the member banks increased less than is usual in the Autumn and early Winter months, and was in considerably smaller volume at the end of 1927 than at the same period of the two preceding years.

As a consequence of the relatively small volume of indebtedness of member banks at the Reserve banks, due largely to security purchases by these banks, conditions in the money market remained easy, notwithstanding the large growth of member bank credit and the export demand for gold, and money rates in the second half of the year were considerably below the levels prevailing at the same season of 1926 and 1925.

Outlook for Current Year

Many competent observers of the paper market anticipate a steady increase in the consumption of paper during 1928 and are not disturbed with the fact that this is a presidential election year. Whether the consumption will overtake the present productive capacity is considered problematical in some quarters, with numerous new machines coming into operation. The paper industry, on the whole, however, is optimistic, and renewed confidence in the future outlook is generally expressed.

In discussing the outlook for the year, Ray M. Hudson, assistant director of the Bureau of Standards, sounds a note of caution and declares that sharp competition and narrow profit margins will continue throughout 1928. "In seeking for causes of smaller profit margins," Mr. Hudson declares, "we may well question whether or not the new, or inter-industry, competition has resulted in lowering prices before these economies in production which would sustain profit at the lower prices have been realized. We may also question whether high pressure, either to combat hand-to-mouth buying or to absorb hitherto idle or unused productive capacity, has not increased the cost of doing business.

"Too high a frequency of change is always costly in manufacturing; too low a frequency of change eventually loses sales. It is conceivable that there is a normal or proper frequency of change

for each general class or kind of goods, and that it may be profitable for an industry, by concerted effort of its members, to find and settle upon that frequency which is best for it. Profitless prosperity, as or where it may exist, may not be altogether the fortuitous concurrence of circumstances. It may be, and perhaps is, in more instances than not, the result of not applying those useful tools of modern business, simplification and standardization, to the solution of current problems."

News Print Production Slightly Higher

North American consumption and production of news print during the past year just exceeded the high record made in 1926. There was a remarkable regional shift in production. Canada continued to gain in world leadership and manufactured 600,000 tons more than the United States. The Canadian increase of 200,000 tons in 1927 balanced a decrease of equal amount in this country. Newfoundland's output of 203,000 tons was 16,000 tons more than the preceding year.

Newspapers showed substantial circulation gains. Government statistics for six months ending September 30 show daily newspapers had circulations of approximately 38,000,000 copies and Sunday issues in excess of 25,000,000 copies. Although advertising declined 4 per cent the volume was greater than in any other year with the exception of 1926. New advertising records are predicted in many quarters for the current year.

During the past nine years 82 new machines with capacity of 6,700 tons news print daily have been added to the North American industry, constituting a doubling of capacity during this period. Additional machines with total capacity of 1,500 tons in various stages of construction and installation will be ready to operate before the Fall of 1928, according to present plans.

Fine Paper Conditions Highly Satisfactory

The situation of the fine paper market during the past year must be regarded as highly satisfactory when it is considered that in the last six months of 1927 the business of the country underwent a recession almost as severe as that of 1924. During the early months of the past year the fine paper market was characterized by a high level. In the Summer there was a seasonal recession followed by a brief and disappointing recovery in the Autumn. In the final months activity decreased somewhat.

Two new machines with a capacity of 18 tons per day were installed for high grade writing paper during the year. Additional tonnage for sulphite bond was also added by diverting production from other grades. Two new sulphite bond machines having a daily capacity of 120 tons have been ordered for the current year. Tonnage of tissue machines was also greatly increased. Five new machines with a daily capacity of 101 tons were installed in 1927 and one machine with a daily capacity of 45 tons has been ordered for 1928.

In conclusion, the total volume of fine paper business was higher than the year before. Writing paper tonnage sold was 5 per cent greater in 1927 than in the preceding year. The amount of cover paper sold was 2½ per cent greater than in 1926 while tissue paper was 3 per cent higher than in the corresponding period of the previous twelve months. Prospects for 1928 are encouraging and production and consumption of all grades of fine paper will probably be on the increase before the end of March.

Conditions in the book paper industry were unsatisfactory during the past year. With several new modern book paper machines installed and a number of re-vamped news print machines in operation, the estimated capacity for the book paper mills in 1927 was approximately 1,840,000 tons. However, consumption did not increase in the same ratio and as a result only 1,400,000 tons were produced, which means that the mills operated slightly below 80 per cent of their capacity.

This situation forced a very weak market and about the middle of the year quotations were weakened to the extent of from $3 to $5 per ton. The mills were forced to further slow down production when consumption did not improve, thus forcing a further reduction in prices in the early Autumn of around $3 per ton.

Although four more new machines are to be installed this year, with an estimated capacity of 140 tons per day, 1928 should prove a better year than 1927 providing there is anything like a normal increase of book paper consumption.

Coarse Paper Production Expanding Rapidly

Production of wrapping paper during the past year increased approximately 70,000 tons over the preceding twelve months. This increase was mostly attributed to the increased output of southern kraft paper, which showed an appreciable gain, although stocks of such paper are reported to be rather high, with a heavy carry-over into 1928. Five new wrapping machines with a daily capacity of 290 tons were installed during the year. In addition to this, there have been ordered for 1928 four new machines with a daily capacity of 360 tons.

With the exception of southern kraft, prices remained steady, in most instances, throughout the year. No radical changes in the southern kraft market were made until November, when concessions were made by the manufacturers, this step being rendered necessary on account of the increased output, due to the placing of new machines into production. In the opinion of competent authorities on the market, however, this condition is only temporary and quotations will probably advance again if there is a normal increase in consumption, as is quite possible.

Paper Board Industry Makes Progress

Satisfactory progress was made by the paper board industry during the past year. Greater plant efficiency was evidenced by reduced costs, particularly labor costs per unit of output, while the volume of sales in relation to other industries was greater than conditions throughout the country warranted.

Box board production was nicely balanced with the demand, which had its effect on market prices, and more stabilization was experienced in the monthly averages than heretofore. Improvements in machinery and equipment have been going on at a rapid rate. Many installations of labor saving devices have also been made in the box board mills during the past year.

Many improvements were effected in the corrugated board plants during the year, with the result that the production per machine increased over 1926 at an average of 11.9 per cent. Reductions in costs have been made by the installations of conveyors and other excellent plans. The average price levels were more consistent than previously. Quotations were highest in May and June at a time when they were most needed.

With the exception of February, activity in the folding box plants was below normal and it was not until the last quarter that the demand increased and turned the year into one of satisfactory activity. Eastern plants gained most in February, but fell off badly until November and December. In the West, activity was low at the beginning of the year, with gradual improvement to August, reaching a top level in October.

Pulp Markets Experienced Depressing Year

Conditions in the chemical pulp industry were rather unsatisfactory during 1927. In the last six months Swedish and German unbleached sulphite exhibited an easy tendency and prices were reported to be below cost of production. The lockout of the Swedish mills in January, however, produced a firmer tone in the market.

The contract price of bleached sulphite was unchanged. Various grades of bleached sulphite of good quality declined, due to overproduction throughout the world, especially in Canada, the Pacific Coast of the United States, Sweden and Germany.

Both domestic and Scandinavian mechanical pulp were reported sold at considerably below cost during the past year. Corrective measures taken by a combination of the Swedish, Norwegian and Finnish ground wood producers in an agreement to curtail production, however, are improving the situation materially.

Paper Stock Business Dull During Past Year

Conditions in the waste paper market were unsatisfactory during 1927, due to some extent to the haphazard manner in which the

business is run. Except for a slight flurry of buying due to the holiday season, mixed papers, manilas and news were quiet most of the year.

Kraft paper, however, was probably the most outstanding grade of the period and succeeded in maintaining a high level throughout the entire year. Soft and hard shavings held fairly firm.

Demand for book stock improved and prices advanced steadily until they were higher than for some years past. This trend was mainly due to scarcity of stock. Ledgers and writings maintained fairly high levels.

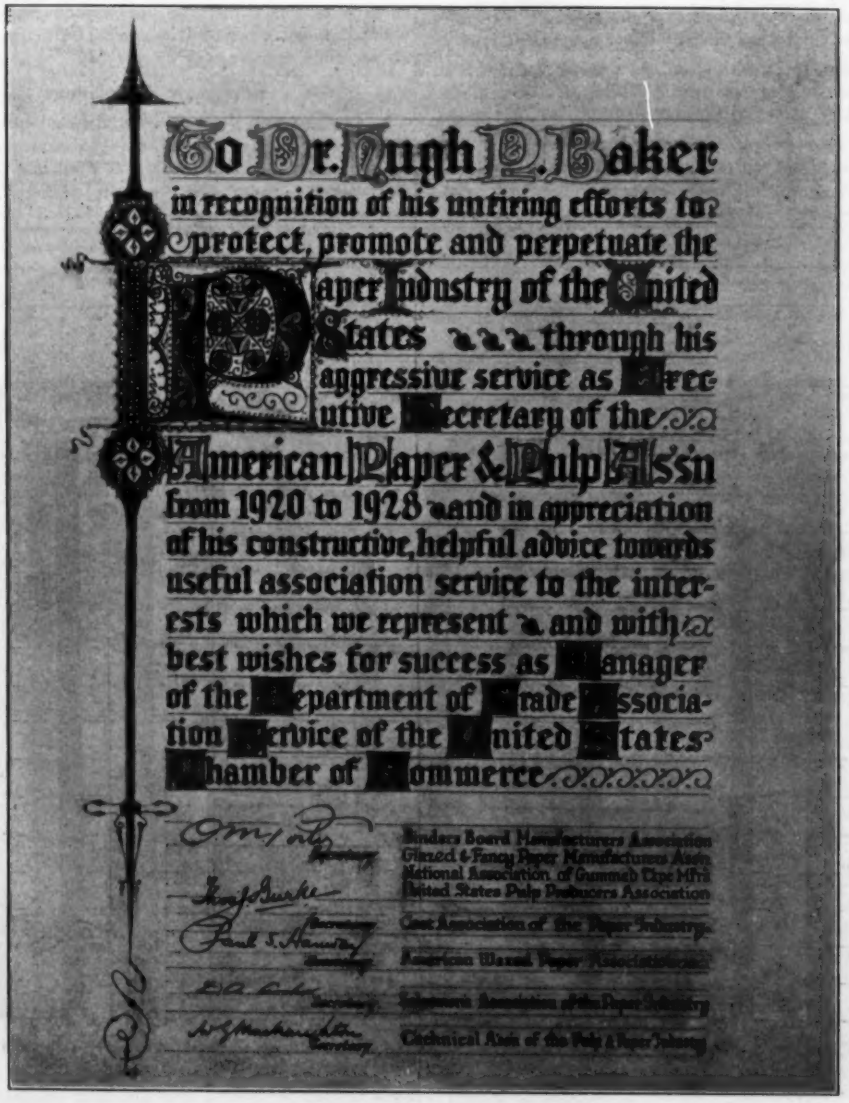
The rag market was decidedly spotty. The demand for new cuttings was near to normal but old rags, with the exception of the wiping grades, suffered from a scarcity of business among the rag consuming mills. The roofing mills were able to keep the market within bounds. The supply of the other grades of domestic rags was generally ample to meet the requirements of the paper mills.

Less rags were imported from abroad than in any preceding year and some grades of old whites were said to have been exported to Europe. The fact that raw cotton values advanced during the year had its effect on the new cutting market, the white grades in particular. Both shirt cuttings and hosiery clips were shipped to the other side of the Atlantic in good sized tonnages.

On the whole, the past year was very satisfactory for the paper maker's chemical industry. Business kept well up to the average of the preceding year while the volume for some special chemicals was considerably heavier. Production expanded moderately in sympathy with the increased request from the various industries.

The market was generally firm in the early months of 1927, price changes being few and only of small interest to the contract buyers. Shipments against contract went forward at an excellent pace. This condition also prevailed in the summer months, but early in the Autumn selling pressure in some lines caused price shading on spot shipments.

With the opening of the contract season, manufacturers generally made slight price concessions on some of the chemicals largely used in paper making. In most quarters the opinion was expressed that the manufacturers evidently felt that small reductions were in line with the general market trend and would induce purchasers to place their contracts early for 1928. This policy proved very effective and the outlook for 1928 is very promising.


To Dr. Hugh P. Baker
in recognition of his untiring efforts to protect, promote and perpetuate the Paper Industry of the United States through his aggressive service as Executive Secretary of the American Paper & Pulp Ass'n from 1920 to 1928 and in appreciation of his constructive, helpful advice towards useful association service to the interests which we represent and with best wishes for success as Manager of the Department of Trade Association Service of the United States Chamber of Commerce
Binders Board Manufacturers Association
Glazed & Fancy Paper Manufacturers Assn.
National Association of Gummed Tape Mfrs.
United States Pulp Producers Association
Cost Association of the Paper Industry
American Waxed Paper Association
Technical Asso. of the Pulp & Paper Industry

FOREST EDUCATION NEEDED

One of the great needs in forestry is more public education. Without it the ultimate object of bringing the forest land in the country under forest management may be delayed indefinitely, says the New York State College of Forestry, Syracuse University.

The Federal Government is awake to this responsibility in connection with the management of its forest properties and while not able to accomplish all that should be done, is far in advance of the states in most respects and still further ahead of the private owners of forest land. Where forestry education is most needed it is most lacking because 80 per cent of the forest land in this country is privately owned and few owners have as yet started to apply scientific principles in handling their woodlands.

The Chief Forester of the United States, William B. Greeley, stated recently that the question of public education constitutes one of the most important immediate needs in forestry. It is the belief of experts that enlightenment of the private owners of forest land as well as "the man on the street," who forms public opinion, must be brought about not only by the distribution of printed information but by practical demonstrations of the application of forestry principles. Setting aside and developing demonstration forests for this purpose is beginning in some states, particularly in the State of New York where not only the farm bureaus are interested but the sportsmen and private individuals have established forests as object lessons. These forests are of three types—the forest for educating the farmer, the forest for educating the sportsmen, and the forest for general public education.

News Print Output Slightly Higher Last Year

While North American Production and Consumption Only Just Exceeded High Record of 1926, the Regional Shift Was Great—Canadian Increase of 200,000 Tons Was Balanced by Decrease of Equal Amount in United States—Newfoundland Manufactured 16,000 More Tons—New Machines, Together With Increased Efficiency of Old Machines, Brings North American Capacity to 15,000 Tons Daily.

Abstract of Report of R. S. Kellogg at Annual Meeting of News Print Service Bureau

PRODUCTION and consumption of news print paper in North America in 1927 equalled but only slightly exceeded the high record made in 1926. However, there was a great regional shift in production.

To a total continental output of 3,789,000 tons, Canada contributed 55 per cent, the United States 39 per cent, and Newfoundland 5 per cent. Canadian production of 2,087,000 tons was 11 per cent more than in 1926, United States production of 1,485,000 tons was 12 per cent under 1926, the Newfoundland output of 203,000 tons was 16,000 tons over the previous year, and Mexico's contribution to the continental total was 14,000 tons.

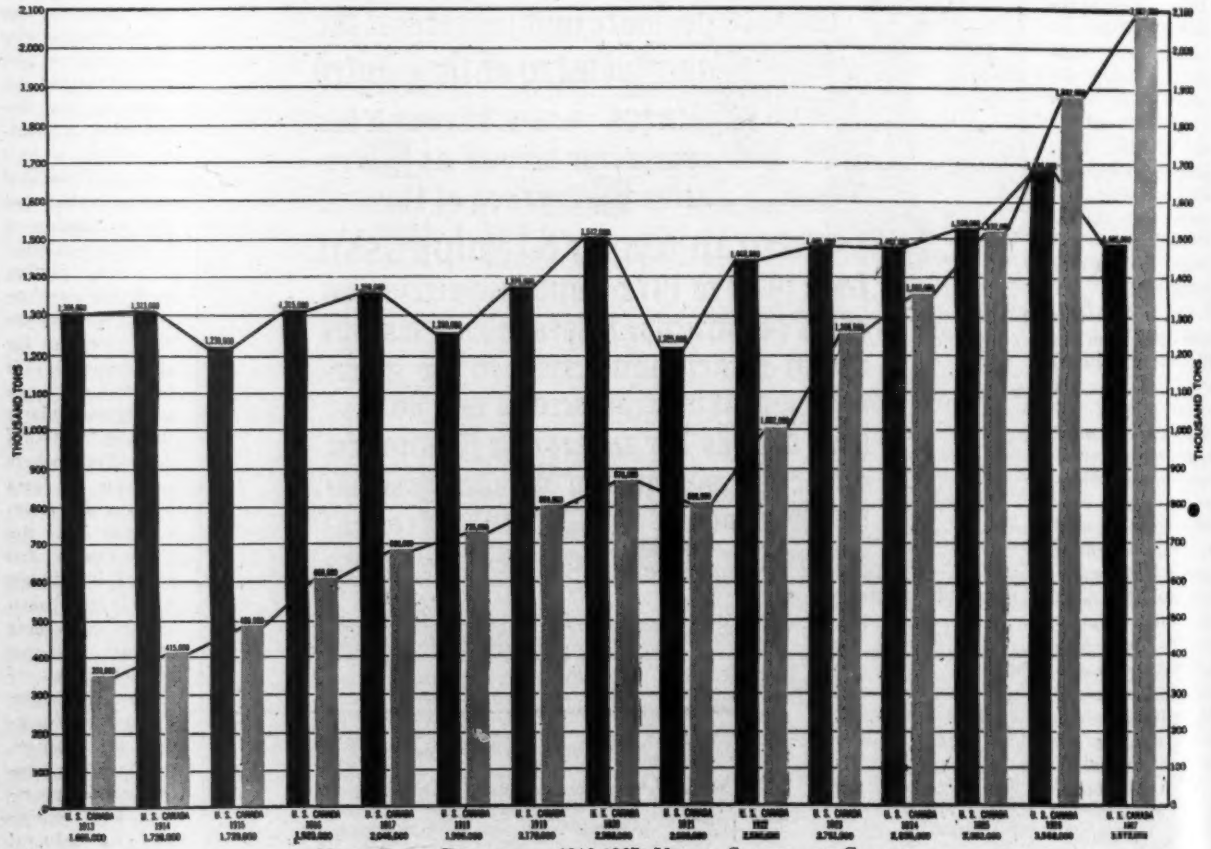
Canada attained world leadership in news print with a production of 196,000 tons in excess of the United States in 1926, but this lead was increased to 600,000 tons in 1927. The Canadian increase of 200,000 tons in 1927 balanced a decrease of equal amount in the United States, so that the total supply for the two countries was not changed.

According to Government reports, 85 per cent of the news print made in Canada in 1927 was shipped to United States publishers and 6 per cent overseas. United States exports of news print amounted to only 12,000 tons last year. Of the Newfoundland shipments, 88,000 tons came to the United States and the balance went overseas. In addition to these sources, the newspapers in the United States also received 121,000 tons of paper from Europe in 1927, chiefly from Scandinavia.

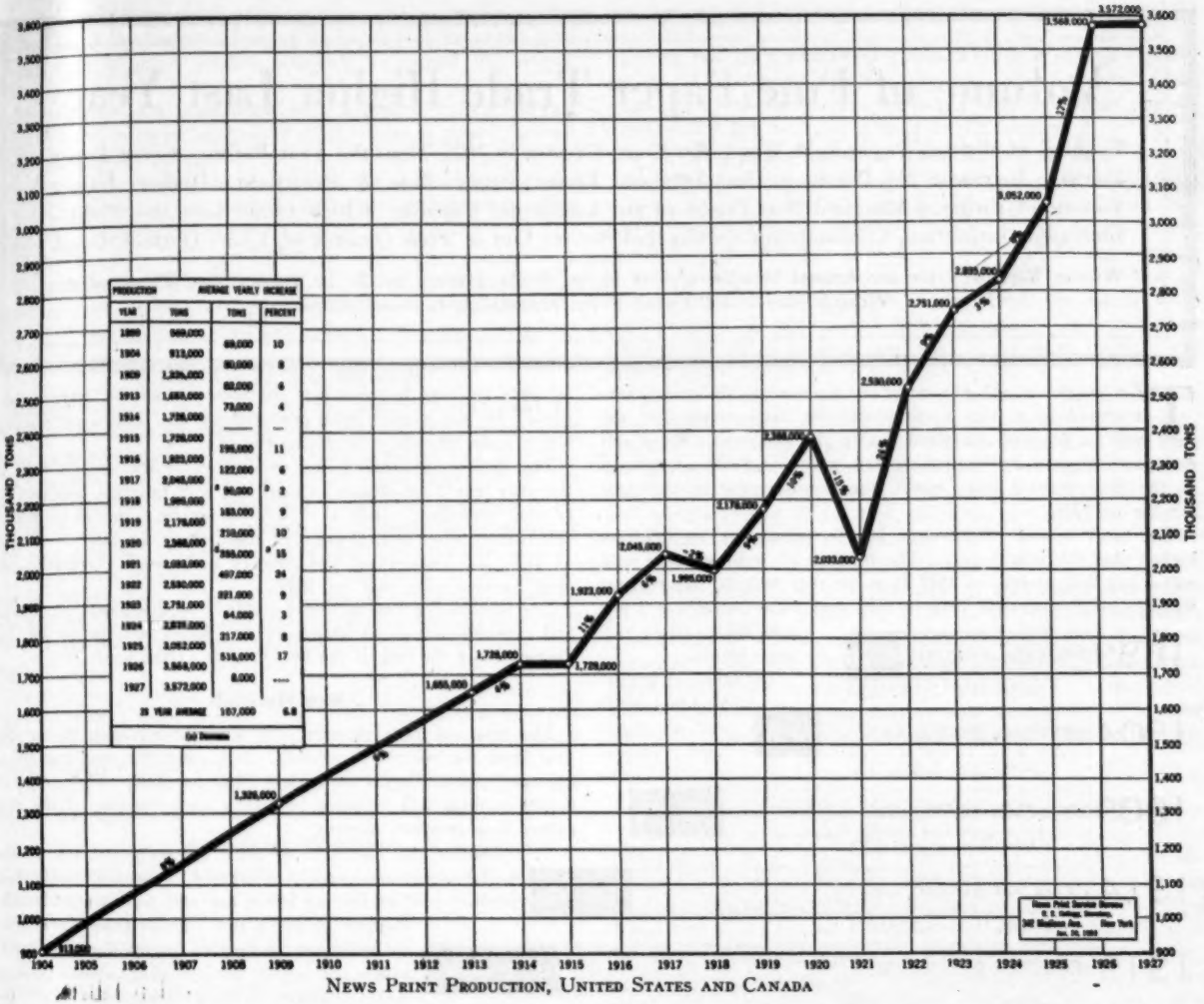
Since 1920 a total of slightly more than 1,000,000 tons of news print has come into the United States from Europe, of which Sweden supplied 41 per cent, Germany 22 per cent, Finland 21 per cent and Norway 13 per cent.

Newspaper Circulations Gaining

Newspapers still show substantial circulation gains in the United States, the increase in 1927 being about 5 per cent. According to figures compiled by *Editor & Publisher* from reports to the Government for the six months ending September 30, daily



NEWS PRINT PRODUCTION, 1913-1927, UNITED STATES AND CANADA



NEWS PRINT PRODUCTION, UNITED STATES AND CANADA

newspapers had a circulation of nearly 38 million copies and Sunday issues in excess of 25 million copies.

Daily papers of more than 100,000 circulation averaged 30 pages each in 1927, as in 1926, but Sunday issues averaged 107 pages compared with 111 pages in 1926 and 109 pages in 1925. Sunday papers seem to have passed their maximum size and neither are their circulations increasing so rapidly as those of the dailies.

Advertising Declines Imperceptibly

Newspaper advertising in 1927 was 4 per cent under 1926, but in greater volume than in any other year. There is reasonable basis for the belief that 1928 will set new advertising records for the dailies and perhaps for the newspaper business as a whole. During the first part of January the automobile newspaper advertising in New York City was 24 per cent greater than in the same period of 1926. In Montreal at the same time the automobile advertising lineage doubled over the previous year.

Growth of Machine Capacity

In the nine years from 1919 to 1927 inclusive, 82 new machines, with a capacity of 6,700 tons daily were added to the North American news print industry. These new machines, together with increased efficiencies of older machines, constituted a doubling of industry capacity during this period. At this time there is a capacity in round numbers of 700 tons in Newfoundland, 5,600 tons in the United States and 8,700 tons in Canada, a total of 15,000 tons daily.

There are also additional machines with a total capacity of some 1,500 tons in various stages of construction and installation, all of which, according to present plans, will be ready to operate before the Fall of 1928.

NEW MILL FOR KETCHIKAN

B. F. Heintzelman, assistant district manager in charge of forest management at Juneau, Alaska, states that early in April engineers and timber cruisers will be dispatched to the Tongass national forest to start surveys for a prospective pulp and paper project. The Zellerbach interests propose to build a 400-ton capacity pulp and paper mill near Ketchikan, with prospects for completion in time for operation to begin in 1932.

The initial required output will be 200 tons daily with a 400-ton daily output ultimately. The company will be compelled to develop its own logging operations, to manufacture pulp into finished news print at the plant and to develop sufficient waterpower.

A total investment of $10,000,000 for the plant is estimated, while the contract calls for the payment to the government of about $35,000,000 for the timber to be used in the 50 years over which the contract extends.

The Zellerbach company is one of two syndicates which are said to have contracted for 5,000,000,000 feet of pulp timber in the Tongass national forest. The Zellerbach timber will come from the southern part of the forest.

Mr. Heintzleman, as representative of both the forest service and the federal power commission, has been in San Francisco conferring with Zellerbach officials. He expects to sail from Seattle for Juneau at once.

Volume of Fine Paper Trade Higher Last Year

Tonnage of Writing Paper Sold Was 5 Per Cent. Greater in 1927 Than the Year Before—Cover Paper Tonnage Increased 2½ Per Cent. Over 1926 and Tissue Paper Was 3 Per Cent. Higher—Larger Volume of Business Absorbed Was Produced By Additional Capacity Which Came Into the Field—Increased Output and Consumption Anticipated Before End of First Quarter of Year—Outlook Good.

Written Especially for the Annual Number of The Paper Trade Journal by E. H. Naylor, Sec.-Treas. of the Writing, Cover and Tissue Paper Manufacturers Associations.

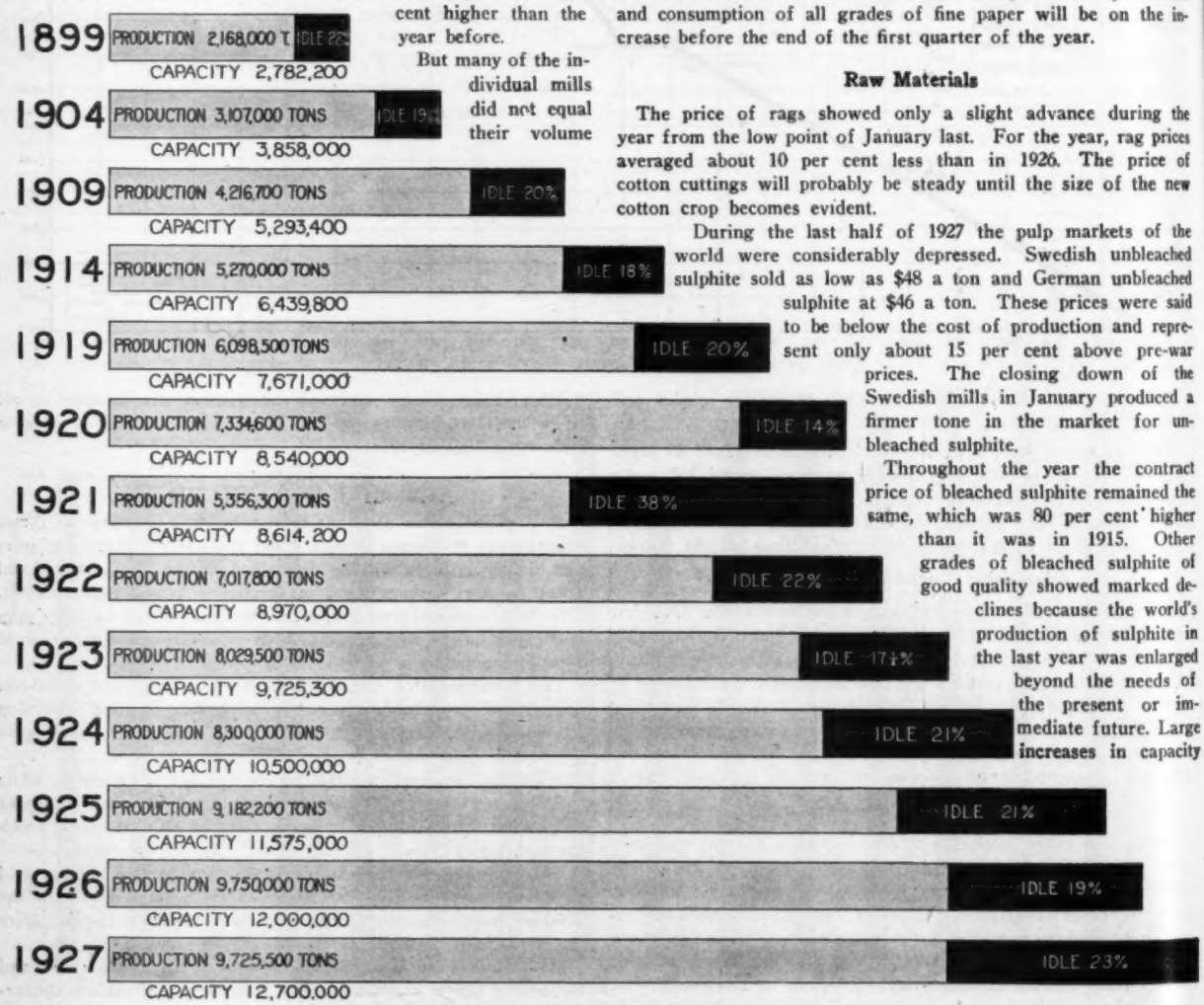
THE course of the fine paper market during 1927 was characterized by a high level during the early months of the year, a seasonal recession during the summer, a brief and disappointing recovery during the fall, and a decrease of activity in the final months, very much like the decrease in the final months of 1926.

The total volume of business for the year was nevertheless higher than the year before. The tonnage of writing paper sold was 5 per cent greater in 1927 than the year before; cover paper was 2½ per cent greater than in 1926, and tissue paper was 3 per cent higher than the year before.

But many of the individual mills did not equal their volume of 1926 business because the additional volume of business absorbed by the market was produced by the additional capacity which came into the field during the year.

The decline in demand and production in the second half of the year was in moderate proportions, and business appeared to be well stabilized. Such a situation must be regarded as highly satisfactory when it is considered that during the last six months of 1927, the business of the country underwent a recession almost as severe as that of 1924.

The outlook for 1928 is sound and it is expected that production and consumption of all grades of fine paper will be on the increase before the end of the first quarter of the year.



CAPACITY AND ACTUAL PRODUCTION OF PAPER MACHINES IN U. S. A.

Raw Materials

The price of rags showed only a slight advance during the year from the low point of January last. For the year, rag prices averaged about 10 per cent less than in 1926. The price of cotton cuttings will probably be steady until the size of the new cotton crop becomes evident.

During the last half of 1927 the pulp markets of the world were considerably depressed. Swedish unbleached sulphite sold as low as $48 a ton and German unbleached sulphite at $46 a ton. These prices were said to be below the cost of production and represent only about 15 per cent above pre-war prices. The closing down of the Swedish mills in January produced a firmer tone in the market for unbleached sulphite.

Throughout the year the contract price of bleached sulphite remained the same, which was 80 per cent higher than it was in 1915. Other grades of bleached sulphite of good quality showed marked declines because the world's production of sulphite in the last year was enlarged beyond the needs of the present or immediate future. Large increases in capacity

were made in German, Sweden, Canada, and especially on the west coast of the United States. It is hoped that increasing consumption of bleached sulphite will help to correct the market situation.

The situation in ground wood, both here and in Scandinavian countries, was more serious than in other grades of pulp. Ground wood pulp on both continents was reported sold considerably below cost. Corrective measures were taken by a combination of the Swedish, Norwegian and Finnish ground wood producers in an agreement to curtail production.

Labor

There was practically no change in the labor situation in the paper industry in 1927. Wage rates in the fine paper mills remained at about 132 per cent above the pre-war rate throughout the year.

Installation of New Machines

Reports received from paper-making machinery manufacturers indicate that 29 new machines, with a daily capacity of 1,374 tons, were installed in the United States in 1927.

These machines represent an increase in capacity for the industry as a whole of approximately 426,000 tons a year. In addition to this, there were numerous increases to capacity by improvements and betterments in existing machines.

The increase in capacity for 1927 is estimated to be approximately 700,000 tons. The total volume of production, however, showed very little change over the amount produced in 1926 so that in 1927, 23 per cent of the capacity was idle, a relatively high figure.

Despite the existing wide margin between production and capacity, orders have already been placed for thirteen new machines for 1928. These will further increase the existing capacity by approximately 250,000 tons.

The capacity of the paper industry for 1928 will be more than double the capacity of 1914.

Analysis of Machines

During 1927, two new machines with a capacity of 18 tons per day were installed for high grade writing paper. Additional tonnage for sulphite bond was also added by diverting production from other grades. Two new sulphite bond machines having a daily capacity of 120 tons, have been ordered for 1928.

The extensive building in the last few years in the book branch of the industry was somewhat moderated, but still appears to be far above consumption requirements. Five new machines with a daily capacity of 195 tons were installed in 1927. Two new machines with a daily capacity of 80 tons have been ordered for 1928.

The increased tonnage of tissue machines was large. Five new machines with a daily capacity of 101 tons were installed in 1927, and one machine with a daily capacity of 45 tons has been ordered for 1928.

There were reported five new wrapping machines with a daily capacity of 290 tons. In addition to this, there have been ordered for 1928, four new machines with a daily capacity of 360 tons.

The largest number of new machines added in 1927 was in the board branch of the industry, where six new machines were installed, with a daily capacity of 456 tons. In addition, two new machines, with a daily capacity of 160 tons, have been ordered for 1928.

In "All Other" machines there is included one glassine machine having a daily capacity of 45 tons for 1927, and two glassine machines with a daily capacity of 35 tons ordered for 1928.

In news print, three machines with a daily capacity of 266 tons were installed last year, but one of these will not be in operation until this month. The total capacity of the industry in the United States has not shown a corresponding increase as some of the tonnage was diverted to other grades or eliminated entirely. No additional news print tonnage is expected in the United States for 1928. However, there will be at least eleven such machines installed in Canada, with a total capacity of about 1100 tons a day.

During 1927 the Canadian mills sold 84 per cent of their capacity output. It is evident, therefore, that the paper interests on the other side of the border are increasing capacity beyond current requirements, just as is being done in this country.

Production Failed to Show Normal Growth

Since production in 1927 failed to show the usual normal growth, it seems safe to assume that consumption and production in 1928 for all grades will be somewhat higher. It can hardly be expected, however, that the demand for paper will be large enough to cause production to come anywhere near our present capacity plus the additional capacity that is coming into the market from time to time. If the spread between capacity and production continues to widen, business conditions in the paper industry will become more serious and competition keener.

There is another thing which the business man should take into account when planning expansion programs. The future course of commodity prices in the United States is an important fundamental in any business calculation. The best information available at the present time is that prices in the United States will remain around 50 per cent above the pre-war level through the present decade—that is, through 1930.

Looking Ahead

Looking ahead after 1930 we may be confronted with lower prices in the United States and in the world. Where investments of a permanent nature are being made the possibilities of a lower price level in the next decade must be given serious consideration. Investments made in buildings and machinery at present prices would shrink in dollar value under a lower price level. May paper mills contemplating expansion or any additions bear this in mind.

UNION LEADERS TO CONFER AT ALBANY

There will be no wage scale conference this spring of the International Brotherhood of Papermakers, according to announcement coming from Brotherhood headquarters, following tabulation of the vote of local unions on the subject. The unions voted five to one against the conference, with only one union in Northern New York in favor.

There will, however, be a conference in Albany, N. Y., the latter part of March of International representatives from unions dealing directly with the making of the agreements with paper companies. This conference is necessary in view of the fact that a number of wage and working agreements will expire in May. Among those expected to participate in this conference are Brotherhood President William R. Smith; John P. Burke, of Fort Edward, president of the Pulp, Sulphite & Paper Mill Workers' Union; J. J. McEntee, of Jersey City, representing the machinists; J. P. Dowling, of Albany, N. Y., representing the electricians' union; John Flynn, of New York City, representing the carpenters, and the firemen's union will be represented probably by John F. McNamara, of Boston, who was recently elected president of this organization.

The coming conference will bring to this city one of the most important groups of union leaders that has gathered here in recent years. The conference will go over the agreements made with paper manufacturing companies, particularly those which expire this year. Later where new wage and working agreements will have to be negotiated it is expected that there will be a few minor changes and adjustments made.

Matthew J. Burns, former secretary of the International Brotherhood of Papermakers and unsuccessful candidate last fall for president of the organization, is again engaged on union matters and during the past two weeks has visited Washington, D. C., and Baltimore, Md., in the interests of increasing consumption of union water-marked paper. Before returning to Albany he will visit Philadelphia and New York and confer with publishers in these cities to urge a wider use of the water-marked paper.

Wrapping Output Exceeded Consumption in 1927

Greatly Increased Production, Especially in Southern Kraft Mills, Resulted in Inevitable Sagging of Quotations in Last Quarter of Year—Situation Mainly Due to Rapid Building of New Kraft Mills in South and Pacific North-West and to Installation of New Machines in Existing Plants—While Immediate Outlook Is Not Encouraging, Sane Management Will Mitigate the Conditions Very Materially.

Written Especially for the Annual Number of the Paper Trade Journal by George K. Gibson, Sales Manager, Wausau Sulphate Fibre Co.

THE consumption of wrapping paper for the year 1927 was maintained in good volume with a probable normal increase; the production of wrapping paper showed a substantial increase over consumption; the result was the inevitable sagging of prices during the last quarter of the year.

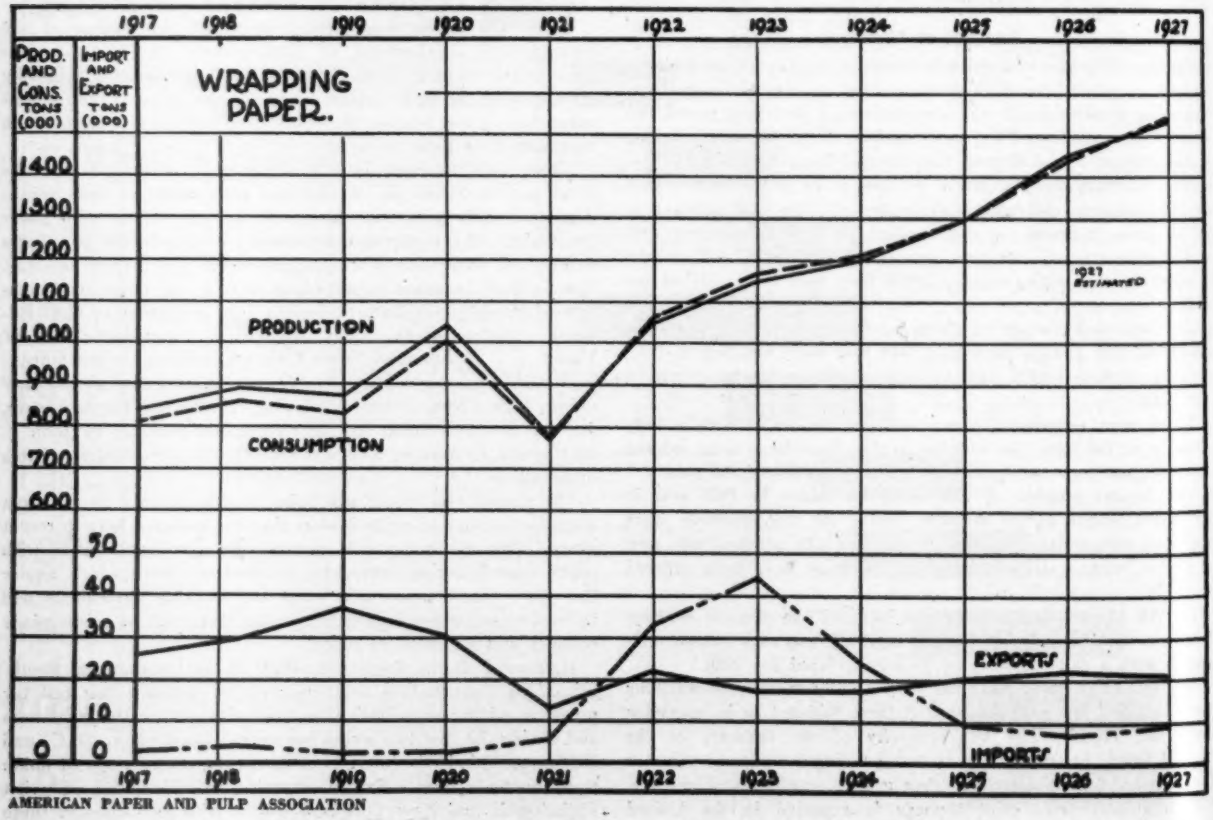
The wrapping paper market started the year on high and on a stabilized price basis, but ended the year on low with a diminished volume of orders going to the mill due to the drastic, unwarranted cut in the kraft wrapping paper prices on November 18.

Whatever else of moment or interest to the trade in general happened in the wrapping paper industry during the year, it is certain that the over-shadowing and outstanding matter of importance is the fact that production overtook consumption in 1926 and forged substantially in advance in 1927.

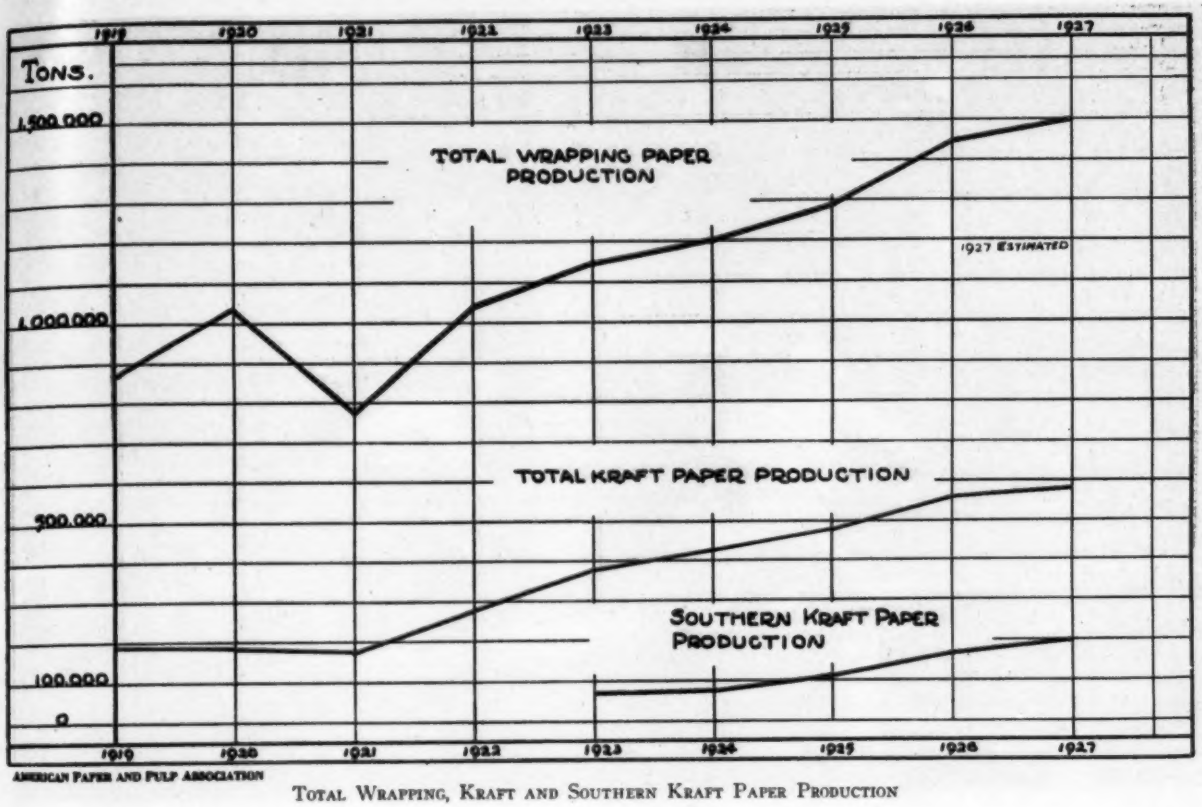
So marked is the over-production in the wrapping paper industry, particularly in kraft, that in the judgment of all branches of the trade, it will be some considerable time before production and consumption will be balanced as they were during the year 1926.

The over-production of wrapping paper is a distinct menace to profitable operation in the industry. It is due to the rapid building of new kraft mills in the south and the Pacific northwest; to the installation of new machines in existing plants; to the speeding-up of productive capacity in the mills already in production; to the diversion of machines making other grades of paper to kraft production; and to the policy pursued by some mills of making so-called "mixed" sheets which are put on the market under the brand of "kraft."

In addition to the above, we must not overlook the continued effect of the hand-to-mouth buying policy which functioned with increasing certainty and efficiency through 1927 due to the unparalleled efficient railroad and transportation facilities and to the



PRODUCTION, CONSUMPTION AND EXPORTS AND IMPORTS OF WRAPPING PAPER



TOTAL WRAPPING, KRAFT AND SOUTHERN KRAFT PAPER PRODUCTION

additional fact that all buyers and consumers of wrapping paper knowing that substantial over-production of wrapping papers existed, backed away from the markets and cut stocks ordinarily carried to the bone. It is claimed that the inventories of wrapping paper carried by consumers and merchants were lower on January 1, 1928, than at any time within the last ten years.

In 1926, the production of wrapping paper and the consumption of wrapping paper were as near a balance as we have ever known. During 1927, 350 tons per day of kraft wrapping and 50 tons per day of sulphite wrapping, making a total of 400 tons daily new production, came on to the market. This new kraft tonnage alone increased the amount of kraft wrapping paper coming on to an already groggy market by 20 per cent. In addition was the kraft wrapping paper made by machines taken off other products and the imitation kraft put into the market made by ground wood and sulphite mills.

Kraft Wrapping Prices Decline

As the year progressed, the effect of this constantly increasing tonnage became more and more manifest. Buyers and consumers lost confidence in the stability of the prices and became more and more cautious in their purchases. Early in the last quarter of the year, predictions were freely made that there would be a decline in kraft wrapping paper prices. Competition never was so keen nor vicious as during that period. Orders received by the mills, especially kraft mills, were constantly showing diminished volume. Stocks were piling up rapidly when November 1 arrived. On November 18, the announcement of a cut of $10.00 per ton, initiated by the southern kraft mills, struck the market like a bolt from the blue.

The reason for such a cut seems to have been the old mistaken notion that a cut in price would stimulate orders. The cut came, and immediately, the current of orders flowing to the mills dropped off 50 per cent, and that season which has, in all other years, been the heaviest buying and consumptive season of the year, was turned into the most inactive and profitless time of the year.

Whatever other excuses or reasons may be given to substantiate the cut in price, there is but one basic reason for it and that is—"over-production." The responsibility for this over-production lies with the management of those mills which came into production during the year and of those mills that substantially increased their producing during the year.

What seems so strange to the modern student of business is that producers of commodities, especially kraft paper, fail to understand that when more commodities are produced than the market will consume, the price must sag to a profitless producing basis.

Outlook for Current Year

The outlook for 1928 is not encouraging, for in addition to the increase in production of 1927 noted above, additional new kraft production aggregating 400 tons daily, is scheduled to come into the market in 1928, thereby increasing the production of kraft wrapping paper over that of 1927 by something more than 17 per cent. In other words, the wrapping paper industry, starting from a balanced production and consumption in 1926, has to find in 1928 a market for a substantial 35 per cent increase of kraft wrapping over-production.

What's the answer? A buyer's market for the next five years—and that only provided no more new mills are built, no further plant expansions or extensions take place and no more foolish market tactics are practiced.

Now, over-production is not alone the bane of the wrapping paper industry. It is the evil that besets the entire paper industry and is the factor that is producing the "profitless prosperity" in all American Industry.

It is hoped that the paper mills during 1928 will understand that looking into the face of a 35 per cent over-production, there is but one course to pursue and that is to adjust operations to the orders

CUTTING SOUTHERN PINE FOR THE LOUISIANA KRAFT PAPER MILL OF INTERNATIONAL PAPER MILLS

on hand, at advanced price levels for every kraft mill in the United States claims its right to run to capacity. However, on the basis of 1926 consumption, the mills already producing plus those coming into production this year can cover the entire market supply by running only 65 per cent of capacity. The lopping off of 35 per cent of operation means greatly increased cost of production and the cost of production is so terrific that it cannot be absorbed by the mills, but should be obtained from the markets.

Sane Management Necessary

We can't close this review without quoting the words of a successful producer of commodities who, looking into 1928 and admitting all the discouragements of over-production that must be faced, said: "If your product is good, your price is fair, your service is prompt and efficient, and your management sane, a profitable volume of business is assured."

American manufacturers of wrapping papers can make good quality papers; they can give prompt and efficient service; the prices for the product will be fair; but the whole question turns upon the sanity of management. As Pierpont Morgan said long ago,—"The confidence of the consumers of commodities and their acceptance of the qualities and prices asked for them turn upon good management." Sane management of paper mills and paper markets will go far to mitigate the prospective punishment for over-production in 1928.

NEWFOUNDLAND PAPER INDUSTRY GROWS

Newfoundland, Britain's oldest colony, bids fair to become one of the great paper producing countries of the world in the opinion of Normas S. Meese, Acting Chief, Paper Division, Department of Commerce. In 1927 it is estimated that about 200,000 tons of news print paper were manufactured on the island, this output ranking Newfoundland ahead of Norway among the news print producers of the world.

For centuries the inhabitants of Newfoundland have depended upon its fisheries, and until recent years, the few other industries of the island have had little more than local significance. During 1927, however, for the first time in the history of the Dominion, the total value of the pulp and paper products of the colony equaled that of its fisheries, each approximating $13,500,000. The increase in the production of pulp and paper has been attributed largely to the fact that the Grand Falls and Cornerbrook mills operated at approximately their full capacity.

Plans for the extension of existing mills will further increase Newfoundland's paper productive capacity. Two more machines are to be added to the Cornerbrook mill increasing its capacity from 400 to 600 tons daily. It is also planned to build a 400 ton mill to utilize the pulpwood in the Gander River Section. These developments when completed will give the International Paper Company a productive capacity in Newfoundland of 1,000 tons of paper daily. This, together with the present output of Anglo-Newfoundland Development Company, will increase Newfoundland's total paper production from 200,000 to 400,000 tons a year.

Newfoundland's production of news print paper has shown striking growth since 1920, when it amounted to 25,937 short tons. It has steadily risen from that figure to 44,083 short tons in 1921, 61,228 tons in 1922, 63,906 tons in 1923, 64,648 tons in 1924, 96,588 tons in 1925, 186,571 tons in 1926 and finally (estimated from nine months' returns) to 200,000 tons in 1927.

In 1927, exports of news print from Newfoundland totalled 199,908 tons, of which 121,160 tons were shipped to the United States, the balance was shipped to the United Kingdom. The total production of the Cornerbrook mill alone was 114,300 tons, valued at $7,429,000. All of this was shipped for the United States with the exception of 3,000 tons exported to New Zealand. Indications are that there will be a steady increase in news print exports to the United States.

Book Paper Industry Had Unsatisfactory Year

Productive Capacity of Various Plants Manufacturing This Grade of Paper Was Greater Than Consumption, Resulting in Selling Price Weakness—In Addition to Five Modern New Book Machines With Approximate Daily Capacity of 200 Tons, Machines Formerly Operating on News Print Were Revamped Into Book Paper Machines—Four New Machines To Be Installed During the Coming Year.

Written Especially for the Annual Number of the Paper Trade Journal.

IN reviewing the book paper industry for 1927 it cannot be considered as a satisfactory year. The productive capacity of the various mills manufacturing paper of this grade increased a larger percentage than the consumption increased, which naturally forced weakness in the selling price and the mills were not able to operate to capacity.

New Machines Installed Last Year

From the best information obtainable there were installed during the year 1927 five modern new book machines with a capacity in the neighborhood of 200 tons per day. In addition to this a number of machines that formerly operated on news print were revamped into machines for making book paper, which put on the market an additional 200 to 300 tons per day.

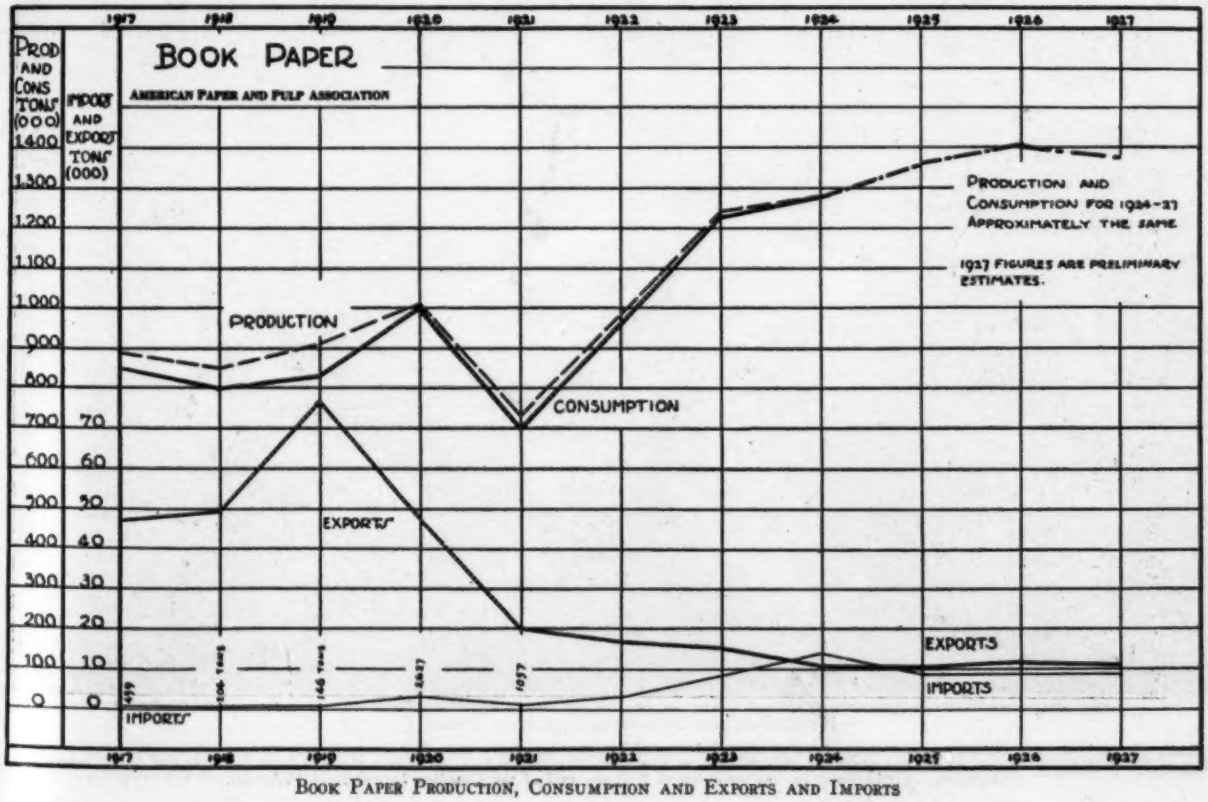
Mills Curtail Output

At the beginning of the year, the book paper manufacturers were perhaps not operating over 90 per cent of capacity. In addition to this, the new machines that were installed, together with machines that were turned on to the book paper grade, forced a very weak market. About the middle of the year prices were weakened to the extent of $3 to $5 per ton.

Conditions did not improve in the consumption of these grades and the mills were forced to slow down their production, this naturally increasing the weakened condition in the market, which forced a further reduction in the prices in the early fall of probably an average of $3 per ton.

Tendency of Prices

At the beginning of 1927 it was estimated that there were 79 paper mills in the United States, making paper that can be considered in the book paper class. These mills were equipped with 232 Fourdrinier paper machines with a capacity of about 5,000 tons per day. As twelve new machines for manufacturing book paper and kindred grades were installed during 1926, the additional



BOOK PAPER PRODUCTION, CONSUMPTION AND EXPORTS AND IMPORTS

machine capacity for 1927 made a total capacity of almost 25 per cent more than the market was taking up.

It is estimated that the total capacity for the book paper mills in 1927 was about 1,840,000 tons. From the best obtainable figures, there were not more than 1,400,000 tons produced, which is about 24 per cent less than the rated capacity. This means that the mills must have operated slightly below 80 per cent of their capacity or of what they could have produced, had the demand for this grade of paper been equivalent to the production. The lowering of prices to a point where there is very slight margin of profit to the manufacturers has naturally discouraged the further installation of new paper machines.

Outlook for Current Year

From the best information obtainable, there are four new machines to be installed during 1928. These four machines have an estimated capacity of 140 tons per day. This will mean a further increase in the production, but if we have anything like a normal increase in the consumption of this grade of paper during 1928, the situation will be helped to some extent, but not sufficiently to insure operating at full capacity. If there were no new installations for 1928, the capacity of the mills as they are at present would have been sufficient to more than take care of any normal increase in the consumption.

Nearly every line of business seems to be predicting a big year for 1928 on a low margin of profit; in other words, as some business men have termed it, we will experience "profitless prosperity."

If the manufacturers of book paper were brought to the realization that such were the case, and would defer the installation of new machines and expansion for a year or two, or until the consumption had had an opportunity to catch up with the productive capacity, the future of the book paper manufacturers would look very much brighter.

FORT EDWARD MILL COMPLETED

Work on the reconstruction of the Fort Edward, N. Y., mill of International Paper Company has been completed and the mill is now equipped to make special bleached papers. The mill has six machines of a capacity of 130 tons of book paper a day.

The mill is on the Hudson River, about fifty miles above Albany and is also on the feeder terminal of the New York State Barge Canal. It is thus well located for securing its raw materials and the shipment of its product.

Practically all the buildings and equipment have been overhauled and in addition there have been built a new boiler-house, a hydro-electric plant, additional finishing room with super-calenders, a new beater-room, and a bleach plant. The paper machines have been overhauled, and the three machine rooms have been rebuilt. With the exception of the turbines driving the paper machines, the entire mill is now electrically driven.

HYDRO-ELECTRIC PLANTS OF GATINEAU POWER CO.

Farmers (foreground) and Chelsea (background) plants of the subsidiary of International Paper Co. The Farmers plant is designed for 120,000 H.P. in five units of 24,000 H.P. each, and the Chelsea plant for 170,000 H.P. in five units of 34,000 H.P. each. These plants, 7 miles north of the city of Ottawa, are supplying electric power for the operation of Gatineau mill of the Canadian International Paper Co.

Paper Board Conditions Show Some Betterment

Gains During 1927 More Than Offset Losses and While Disappointment Was Expressed During the Mid Year at the Low Volume and Losses, Due to Insufficient Business to Maintain Operating Schedules, Yet the Cost Economies Effected Coupled With Fairly Consistent Price Levels and the Fall Increase in Orders Made the Year's Business Fairly Satisfactory—Good Prospects for 1928—Good Association Work

Written Especially for the Annual Number of the Paper Trade Journal by Grafton Whiting, Statistician of the Paper Board Industries Association

The progress made in any industry is but a composite of the individual activity of each of its members. Through trade associations and the voluntary contribution of figures by those who support them, it has become possible to determine conditions as they exist; and when the association is sufficiently representative, it is fair to assume that its experience is typical of the whole industry.

The Paperboard Industries Association is composed of three groups: the box board mills, the corrugated and solid fiber container manufacturers, and the folding box makers, and in these groups the tonnage output included is such as to give assurance that the Association is representative of the products it covers.

Statistics of the three groups have been gathered in a comparable manner over a period of years and with these as a background one year can be contrasted with another and by projecting the experience of past years, a forecast can be made of what may be logically expected in the future. Such a forecast is illustrated on Chart No. 1 where the solid black line is the expected activity of operation as forecast for 1927 and the broken line the actual for the year.

To anticipate the activity month by month in an industry subject to such seasonal variations, as are found in the manufacture of box board and of boxes, is of distinct value. It is somewhat similar to the approved practice of budgeting now extensively used in accounting but differs because of the fact that a forecast covers an industry and the power to follow it rests in the hands of a large group and is not subject to individual executive control. However with a forecast and a contrast of current procedure the trends can be ascertained with accuracy and a guide procured which assists in the shaping of business policy.

It is the association's duty to foster the welfare of the industry and bring about a better knowledge of conditions for its members. The management in a manufacturing plant generally rests in the hands of one or two executives who in the past have striven for maximum results day by day with scant regard for the future or respect for what his activities may mean to the industry at large.

This attitude is being replaced gradually through association contact by a broader conception based on the theory that the prosperity of an industry is the keynote to success and that cooperation and not continual strife with competitors is productive of greater returns than the short-sighted policy of each man for himself.

Prosperity is predicated upon two general factors: reduction of cost through increased efficiency in manufacture and the building up of sales volume together with the maintenance of a fair margin of profit.

During 1927 progress has been made in the paper board industry in both of these directions. Greater plant efficiency is evidenced by reduced costs, noticeably in labor costs per unit of output; and the sales volume while not as large as was anticipated was built up in its relationship to other industries and was greater than conditions throughout the country would have warranted.

Although the output of the box board mills is the raw material used by the container and folding box divisions, each has har problems to solve and has found different conditions to meet. In reviewing the situations during the past year the three divisions mentioned above are recognized.

Box Board Mill Group

The term "box board mills" is here used to designate plants operating multi-cylinder machines producing board 12 points or more in thickness.

Plant Improvements

Competitive conditions among the mills have demanded a continuous effort to reduce costs through plant efficiency. The makers of paperboard machinery have not been slow to recognize this situation and improvements in machinery and equipment have been

SEASONAL VARIATIONS

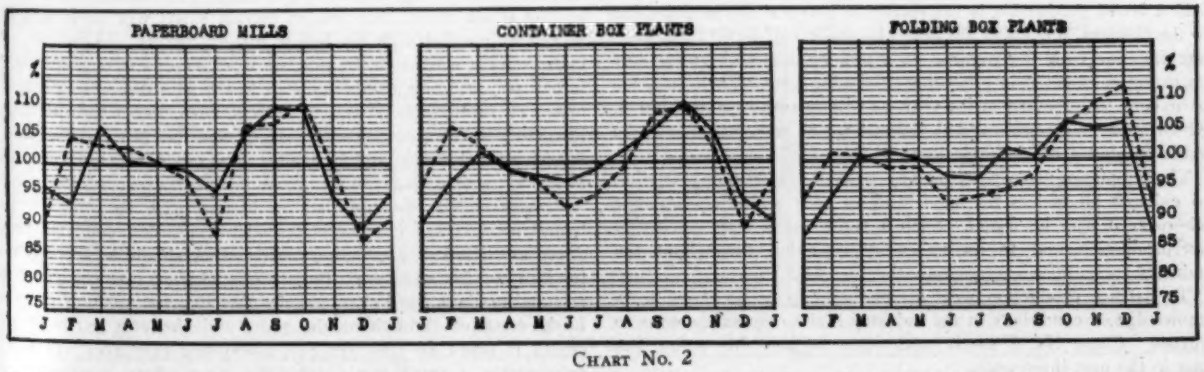


CHART NO. 2

The figures of activity are based on running time with 100 per cent the average month both for the forecast line and for the actual for 1927. It will be noted that the month of February was more active in 1927 than expected. This was due to general business conditions carried over from the previous year. The Summer dullness came earlier and dipped lower than usual with recovery in the Fall as anticipated. The folding box had a heavy schedule in December.

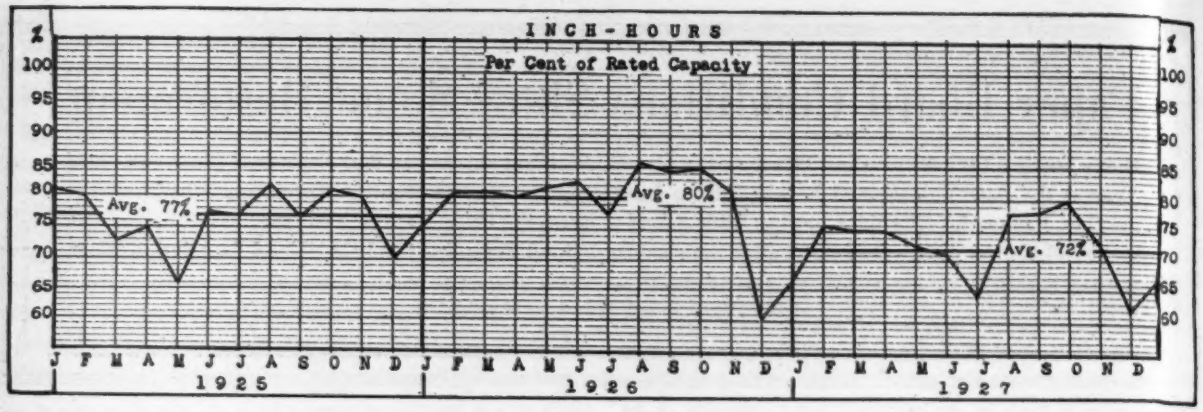


CHART No. 2

The rated capacity in inch hours is found by multiplying the trim width of the machine by 144 hours to give the total inch hours per week. This figure is divided into the actual inch hours run and the result stated as a percentage. The percentages and yearly averages are here plotted for the past three years.

going on at a rapid rate. The old type of power plant with its steam engines and belt drives is being replaced by turbo electric power units. In the beater room individual motors are taking the place of shafting and belts; the jordans are each motor driven; the paper machines are operated electrically; and roller bearings are being introduced to lessen power consumption. A conservative estimate of the savings made run from 10 per cent to 20 per cent and even higher in some instances. Next to power the labor cost is the large item aside from materials in the manufacture of paper board and it is natural that this be attacked in the program of cost reduction. Many installations of labor saving devices have been made in the mills during the past year including automatic stokers, raw material conveyors, power driven mill trucks, and conveyors for handling finished products into storage or for loading into cars.

The cost per ton has been further reduced by increasing the speed of the machines. Additional dryers have been installed; new ventilating systems built in; and the machine crew trained to handle the greater output. The average production for a 90 inch trim machine during 1926 was 2.378 tons per hour and in 1927 for the same width was 2.464 or a gain of 3.6 per cent. With 22,700 trim inches recorded as operating on box board, the increased capacity due to greater speed represents a large tonnage.

Improvements in equipment and methods of operating come to the attention of the association through its cost and accounting department which assists members in the installation and operation of the uniform accounting plan adopted by the association. Improvements in a plant are reflected at once in the unit cost of the output and it is a function of the cost finding to determine the savings made by such changes.

OPERATING

Box board production is susceptible to seasonal fluctuations due to the changes in demand for board by makers of boxes; and anyone familiar with the running of a mill realizes that continuous operation is essential in procuring minimum costs. There are two periods of low demand in the year, as will be seen on Chart No. 2, which must be recognized and planned for if curtailment is to be made without a considerable loss.

The temptation is to postpone any reduction of running activity, to exhaust all orders on hand, and to seek additional tonnage wherever it may be found. Such a policy leads very quickly to overproduction and to an unhealthy condition throughout the industry.

To balance production with demand and to be governed by a knowledge of conditions in the industry is the only safe course to pursue. Chart No. 3 shows with what success this policy has met in the past three years.

The demand is here termed "orders" (broken line) and the supply marked "production" (solid line). The areas between the lines are filled in with black for the periods where production was in excess of orders and white where orders were in greater volume. The year 1927 has less filled in areas than in either 1925 or 1926, and directly following a movement in either direction quick action was taken to expand or contract and thereby restore the balance.

SALES POLICY

The demand and supply have such a direct effect upon prices that they can almost be considered as one and the same. From a study of past performance it was found that the practice of drastic price reduction to force a market during slack periods resulted only in a limited amount of forward buying and nothing at all in the total amount of board consumed. Such price cutting served to demoralize the market for months following and the mills found themselves forced to run low priced orders well into the active periods. During 1927 the balancing of orders and production had its effect on market prices to the point that more stabilization is found in the monthly averages than heretofore. This is a distinct advantage to both the mill and to its customers. To procure a desired profit, the mill must sell its product between the high and low levels at average prices that will satisfy its costs and leave a margin of gain. With fair stability of price levels the mill is able to formulate a definite sales policy and the problem of financing is simplified. In periods of seasonal depression when low volume is accompanied by high costs a consistent sales price helps materially in tiding over the dull period. Customers are more readily inclined to place contracts in advance and for larger amounts where wide fluctuations are eliminated and the relationship between buyer and seller is improved. From the purchaser's standpoint a dependable price assures him that he is obtaining his raw material at approximately the same level as his competitor and he is not afraid that sudden market shifts will cause him to be out of parallel with his fellow manufacturers. In periods of high prices it was often the practice to exact excessive profits and in low periods some plants resorted to the substitution of cheaper materials resulting in inferior products. The buyer had difficulty in costing his own output not knowing what his raw material item would be and the guarding against low quality was a constant source of trouble.

Business ethics demand that an honest price be paid for an honest product and if sales prices wherever a commodity is produced are based on production costs as they should be there is no justification for wide price fluctuations. Labor rate changes are few and gradual, fixed charges and other expense amounts remain fairly constant throughout the year, and the cost per unit of output if based on standard cost accounting principles will vary only within a small range. Healthy competition is encouraged when these facts are known and speculation and sharp business practices are eliminated.

Container Group

The caption "container" is used to designate manufacturers of corrugated and solid Fiber boxes such as are commonly seen in shipments by freight, express and parcel post. Although the construction of corrugated board differs from that of solid fiber and certain commodities are better packed in one than in the other, the general use is much the same and they follow each other closely from a statistical standpoint.

CORRUGATED

During 1927 the improvements noted in previous years have continued at an increasing rate in corrugated box plants. The raw materials used in fabricating a box are bought by the ton at a specified thickness and weight per 1,000 square feet, but the product is sold on a size or area basis. In consequence the records of output are kept for the most part in square feet or 1000 square inches.

The production per machine of corrugated board measured in square footage in 1927 increased over 1926 at an average of 11.9 per cent. Of this increase 2.3 per cent was due partly to the introduction of wider machines replacing the older types and partly to better planning of the work in scheduling similar orders to be run two or more at a time. The remaining 9.6 per cent was gained by an increase in the speed of running as a result of new machines or the altering and lengthening of existing equipment.

Cost Reduction—Reductions in cost have been made by the installation of conveyors not only for handling the heavy rolls or raw material but also for the movement of work in process between one operation and another and by new machines that are making their appearance in the progressive plants such as the combined printing press with creaser, slotter and slitter attachments, the automatic folding and taping machine, and the partition assembling units.

Another method of cost reduction which has been developed in several plants during the past year is the wage incentive plan whereby operators are paid in proportion to what they accomplish within a given time. 15 per cent to 25 per cent gain in production per hour has been found to be not an uncommon result.

Operating—The demand for containers is seasonal (see Chart No. 4) since it is dependent on the needs of shippers and these in turn are governed by the public which purchases more in the spring and fall than at other times of the year.

Unlike the board mills, corrugating box plants can be run on short schedules of time without entailing a serious loss and output follows closely the volume of orders on hand. The average days to run (i.e. time necessary to complete unfilled orders) in mills is over 11 days while for the corrugated containers, it is but little over 6 days. The average running time for 1927 was 77 per cent of full time—a level of 5 per cent below that of 1926. In spite of the shorter hours the year's output due to the increased production per hour was 2.4 per cent greater than last year.

Sales Policy—With less fluctuations in raw material prices as noted above the average price levels for containers held a more consistent trend in 1927 than previously. The high and the low showed a wide spread, but rapid fluctuations did not occur. Prices were best in May and June at a time that they were most needed since operating costs were high and production low. As the season advanced prices declined and volume increased. Encouragement is given by review of last year's performance that prices will adjust themselves to a level more consistent with the material and conversion costs and that the buyers will appreciate the new conditions to the extent of placing orders further in advance than in the past. Forward buying is an advantage to the purchasing agent since prompt delivery can be expected on the scheduled dates. It is an advantage to the manufacturer who can count on longer runs, make up and store boxes if he likes, and plan his operations more effectively.

The year 1928 opens with two or three mergers already accomplished and rumors of others to come. This in a way is a sign of the times, but in reality means that where small units come to-

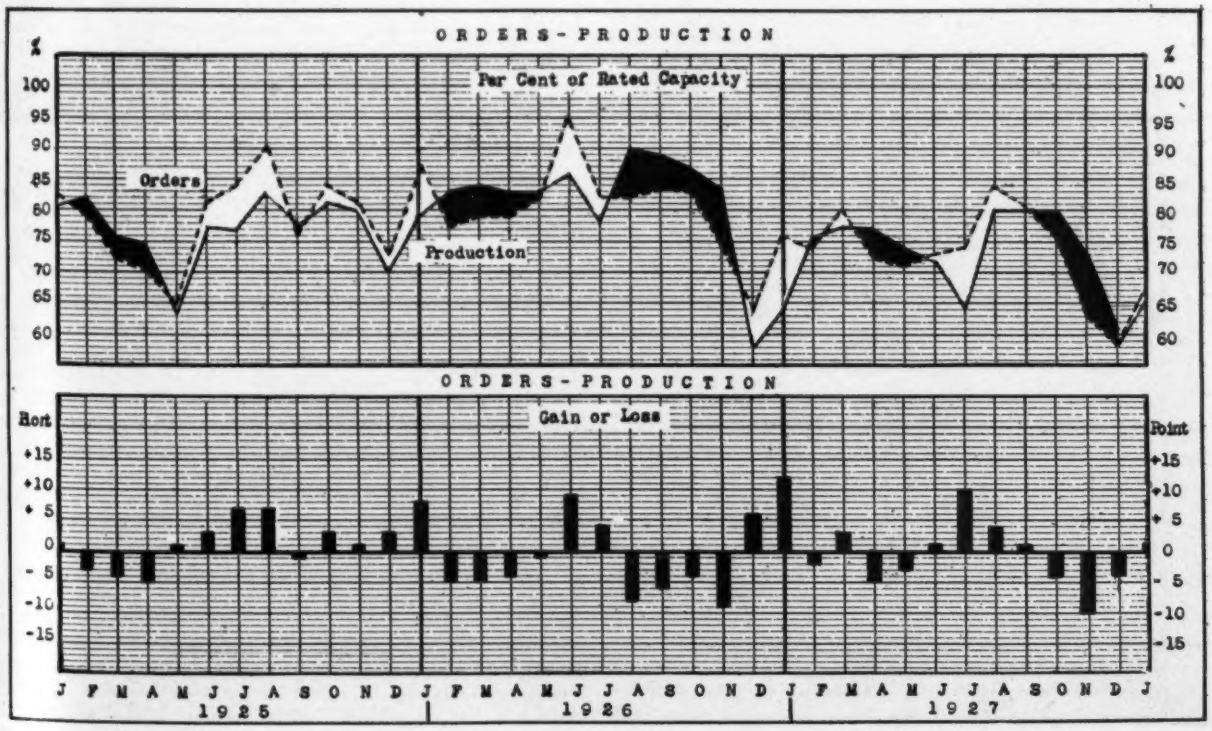


CHART NO. 3

Upper—The tonnage of actual orders on hand is divided by the rated capacity and stated as a percentage. The actual production is figured in the same manner and the results plotted together to form the chart lines. Lower—The difference in the per cent figures here called points are shown in bar chart form. Where orders are in excess of production the bar extends above the horizontal line and below when the reverse is found.

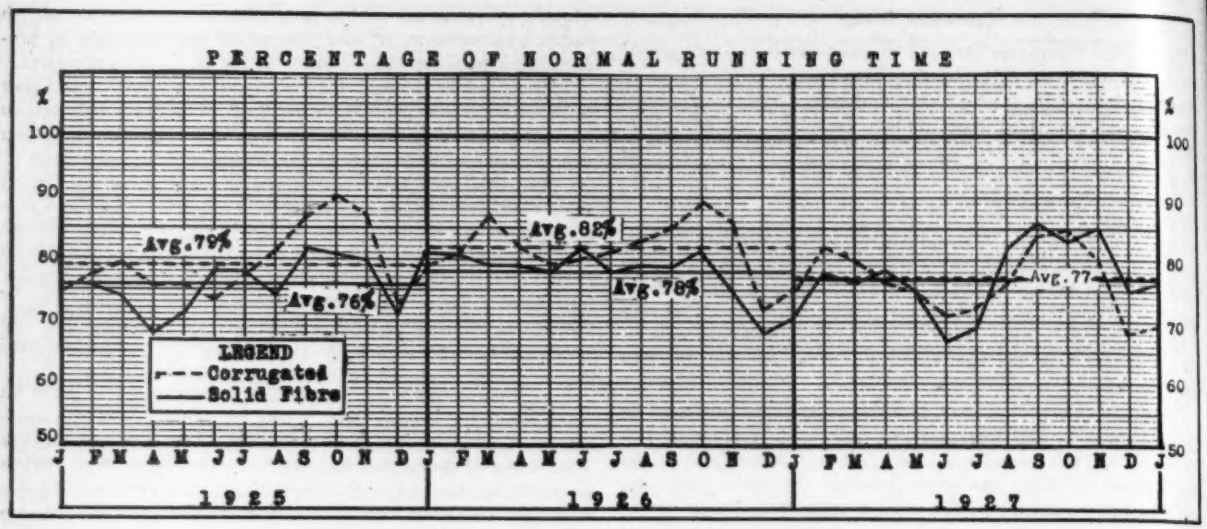


CHART No. 4

The normal or usual hours of operation per week are multiplied by the number of machines (corrugators or pasters) to give the actual possible machine hours. This rated figure is divided into the actual hours operated and gives the per cent of activity.

gether the control passes into stronger hands and that a better and broader business policy will be followed.

SOLID FIBER

Much that has been stated concerning corrugating plants applies to solid fiber. The footage basis for recording output is in use and replacement and improvement in equipment is going on not quite as rapidly as for corrugated but still to an appreciable extent. The square feet per hour show 4 per cent increase in 1927 over 1926; and there was a gain of 4.3 per cent in the total output although the average running time was 77 per cent a decrease of 1 per cent over 1926.

With the cost of raw materials to the box plant following a fairly even trend during the past year sales prices of solid fiber boxes have been running on a more consistent level than heretofore. Competition between the two types of boxes has been keen as it always is and the shifting from one to the other by shippers whose commodities can be packed in either corrugated or solid fiber has tended to keep the sales prices of the two in conformity with each other.

Folding Box Group

A "folding box" is the carton or inner container commonly used to enclose such commodities as food stuffs, cosmetics and medical supplies. It differs from the set up box in that it is collapsible and has flaps or folded ends fitted or pasted together when the box is closed. Such cartons are usually in attractive colors made of well finished box board designed not only to advertise, but preserve and keep clean the contents.

During the first three quarters of 1927 with the exception of February, folding box activity was at a discouragingly low level and it was not until the last quarter that the demand increased and turned the year from one of decided depression into one of normal activity. The Eastern plants gained most in the February business but fell off badly in the subsequent months until November and December. In the West plant activity was low at the beginning of the year with gradual improvement which climbed rapidly in August and reached a top level in October.

PLANT IMPROVEMENT

Equipment in a folding box plant is more like that found in a printing plant doing high class color work. In consequence it has back of it many years of experience and cannot be termed "a young industry" as is the case with corrugated and solid fiber manufacture. Improvements in machinery are less radical consisting of refinements rather than major changes. The introduction of new machines replacing the old type of construction has been going on during 1927, and statistics show that the impressions per hour increased 3.5 per cent over 1926. The total running time was 2.6 per cent less, leaving the year's total output, slightly above the previous year.

SALES POLICY

No improvement in the folding box sales policy is noted during 1927. The low rate of activity during most of the year demoralized the price levels in the market and caused sales forces to seek orders far and wide with increasing sales expense and constantly narrowing margins of profit. It is not surprising under these conditions to find that the quality of the product is becoming poorer. With low prices the manufacturer is obliged to reduce his costs wherever possible and as the raw material is over 60 per cent of the final cost, cheaper board is being used. A comparison of the consumption of board by grades in 1926-1927 is as follows.

Kind	1926	1927	Gain—Loss
Plain chip	6.2%	4.9%	— 1.3%
Single manila lined chip	21.3	32.9	+11.6
White patent coated news	32.9	27.8	— 5.1
Other	39.6	34.4	— 5.2
	100.	100.	0

The relative price of these boards per ton is the explanation of the change that has taken place. The white patent coated boards and the average of the grades included in "other" require better base materials and additional conversion operations which increase their cost and selling price. It is probable that the cheaper boards will protect the contents of a carton equally as well as a better quality but the appearance suffers and with it the impression is given that the commodity also has been cheapened.

The carton is such a small expense contrasted with the average value of the contents that it seems a false sales policy is being followed by the folding box industry to encourage the substitution of inferior grades by their customers.

Welfare of the Industry

It is stated above that "It is the Association's duty to foster the welfare of the industry." This is a simple expression but it covers many activities in a well organized association. Problems often arise which require joint action before legislature or government officers or regulatory bureaus. Constant watch must be had that the industry is safeguarded against laws or regulations harmful to its best interests. Standards and practices within the industry have to be set up and some system established for assuring that they are respected. A new form of competition is now

being recognized which is the competition of one industry with another, as for example; cotton vs. silk, concrete vs. brick, and stone, and fiber containers vs. wooden boxes. Each strives to win public favor for its product and a new type of salesmanship is called for which, without actual consummation of a sale, promotes sales in a tangible way. Men trained in the uses of the industries' products are engaged, to exploit new fields and to make analyses of conditions wherever prospective purchasers of the industries product may be found.

Sales promotion work as carried on by the Paperboard Industries Association has added thousands of tons of new business for the box makers and as a result to the box board mills furnishing the raw materials. The gain in the output of the box plants in 1927 over 1926 in the face of a decrease in other industries was due largely to the successful efforts of the sales promotion department.

1927 - 1928

Viewing the three groups of the industry as a whole, the gains made during 1927 have more than offset the losses and while disappointment was expressed, during the middle of the year, at the low volume and the losses due to insufficient business to maintain the plant schedules of operating, yet with the economies effected in the costs of output, coupled with fairly consistent price levels and the Fall increase in volume, the year's business can be considered satisfactory.

The outlook for 1928, based on last year's experience and the trends of business in past years indicates that better volume and better prices will prevail. The paper board industry is in need of such an increase since the present capacity to produce without any allowance for the new and faster running machines already contracted for installation in 1928, is far in excess of demand.

Sales of paper board products are contingent upon the volume of general business throughout the country and forecasts made by the leading authoritnes indicate that this year has started with low inventories of stocks on hand, with the prospects of easy money rates, with increased buying power in the hands of the public and with rising commodity prices, all of which point to a period of prosperity.

ITALIAN PAPER INDUSTRY DEPRESSED

The Italian paper industry was adversely affected by a number of economic changes during 1927. Foremost among them may be mentioned the revaluation and stabilization of the currency, the suppression of a large number of newspapers and the amalgamation of others, together with the curtailment in the number of pages to not more than six. The decline in building activity also brought about a general reduction in buying, which in turn had an adverse effect on the paper industry.

Reports since the first of the year have stressed the steady fall in production, particularly of news print, writing and wrapping papers, which has been accompanied by a drop in prices. At the same time the situation has been rendered more precarious by the severe decline in paper exports from 11,674 metric tons (metric ton = 2,205 pounds) during the first 9 months of 1926 to 9,729 tons during the same period last year, a fall of 33 per cent.

THREE RIVERS MILL OF CANADIAN INTERNATIONAL PAPER CO.

Located at the confluence of the St. Maurice and St. Lawrence Rivers, 80 miles below Montreal. Mill has a capacity of 700 tons of news print daily.

Pulp Industry Suffers From Over Production

In Spite of This However, 1927 Cannot Be Classified as a Particularly Bad Year, Although It Does Not Compare Favorably With 1926 As Regards Profits or Production—The Decline in Ground Wood Beginning in the Early Part of the Year Averaged About $5.00 Per Ton in the U. S. and Was About Double That in the English Market—Canada Being Principal Producer Gradually Decreased Its Production.

Written Especially for the Annual Number of the Paper Trade Journal by O. F. Swanson, Sales Manager of J. Andersen & Co., and the Pulp and Paper Trading Co.

IN reviewing the pulp industry for 1927, the two outstanding features appear to be over-production and the pulp manufacturers' co-operation with their customers.

The conditions in the pulp trade were such that the old saying "the least said the better" seems to fit in, and in order to obtain the best idea of the conditions prevailing throughout the year, available figures showing tonnages, prices, etc. ought to describe them most clearly. However, in spite of this, and as designated by the following figures, it is apparent that 1927 cannot be classified as a bad year for the industry, although it cannot be compared with 1926, as far as profits and production are concerned.

Quantities in tons of 2000 lbs., air dry weight)

1925			1926	Increase over 1925		Percentage
1,629,689	Mechanically Ground					
612,576	Sulphite Bleached..	646,446	1,774,192	144,503	plus	8.87%
834,615	Sulphite Unbleached	953,330		33.870	plus	5.33%
				188,715	plus	14.22%
		1,599,776				
412,690	Sulphate pulp	523,878	2,123,654	111,188	plus	26.94%
472,647	Soda		496,290	24,283	plus	5.14%
3,962,217			4,394,766	432,549	plus	10.92%

According to export statistics from Canada, Sweden, Norway,

	1925			1926		1927		1926-1927
	Domestic	Import	Consump.	Domestic	Import	Consump.	Difference	
Mechanically Ground	1,629,689	304,953	1,934,642	1,774,192	268,746	2,042,938	5.6%	1,560,000
Sulphite Bleached ..	612,576	277,320	889,895	646,446	295,336	941,782	5.8%	675,000
Sulphite Unbl.	834,615	588,470	1,423,085	953,330	656,990	1,610,320	13.2%	870,000
Sulphate	412,690	392,515	805,205	523,872	472,283	996,161	23.7%	575,000
Soda	472,647	.....	472,647	496,920	.....	496,920	5.1%	482,000
Total	3,962,217	1,563,258	5,525,475	4,394,766	1,693,355	6,088,121	10.2%	4,162,000
				+10.9%	+ 8.3%	+10.2%		— 5.3%

	Imports	Exports	Net Consump.	Difference	Domes.	Import	Consump.	Difference
Mechanically Ground	268,746	4,359	264,387	—13.4%	1,560,000	190,950	1,750,950	—14.3%
Sulphite Bleached ..	295,336	39,788	255,548	— 3.4%	675,000	323,491	998,491	+ 6 %
Sulphite Unbl.	656,990	86,637	570,353	— 1.4%	870,000	598,387	1,468,387	— 8.8%
Sulphate	472,283	7,439	464,844	— 6.6%	575,000	467,471	1,042,471	+ 4.7%
Soda	.....	.....	.....		482,000	.....	482,000	— 2.9%
Total	1,693,355	138,203	1,555,152	— 1.5%	4,162,000	1,580,299	5,742,299	5.7%
	+ 8.3%				— 5.3%	— 6.7%	— 5.7%	

Finland and Central Europe, the volume of chemical pulp shipped to the U. S. A. was as follows:

1925		Canada	Sweden	Norway	Finland	Other Countries	Total	Percent
304,953	Mechanically Ground	258,525	3,237	2,076	569	4,359	268,746	—12.3%
277,320	Sulphite Bleached	160,472	41,367	51,139	2,570	39,788	295,336	+6.5%
588,470	" Unbleached	230,439	259,080	9,778	71,056	86,637	656,990	+11.6%
392,515	Sulphite, bleached & unbleached	171,433	256,631	15,204	21,576	7,439	472,283	+20.3%
1,563,258		820,869	560,315	78,197	95,771	138,203	1,693,355	+8.3%

Exports of pulp from U. S. A. are not specified as to grades in available statistics, but the total tonnage for 1925 was 37,995 tons and for 1926—34,220 tons.

Actual figures concerning the domestic production of wood pulp, chemical and mechanical for 1927, are not available, but judging from the information on hand, the production is estimated as follows:

	1927	Compared with 1926		
Mechanically ground.....	1,560,000	— 11.9%		
Sulphite pulp	1,545,000	— 3.4%	{ bleached	675,000 +4.4%
Sulphate pulp unbleached..	575,000	+ 9.8%	{ unbleached	870,000—8.7%
Soda pulp	482,000	— 3.0%		
	4,162,000	5.3%		

Imports of Pulp To U. S. A.

Imports of pulp to U. S. A. during 1927,—calculated on the exports from above named countries, are as follows:

	Canada	Sweden	Norway	Finland	Other Countries	Total 1927	Compared with 1926
Mechanically Ground	179,140	1,890	1,100	5,820	3,000	190,950	— 29 %
Sulphite Bleached	181,471	51,000	47,040	1,680	42,300	323,491	+ 9.5%
Sulphite Unbleached	162,367	296,000	17,920	72,800	49,300	598,387	— 8.9%
Sulphate Unbleached	169,657	261,000	13,684	21,280	1,850	467,471	— 1 %
Total	692,635	609,890	79,744	101,580	96,450	1,580,229	— 6.7%
Increase (+) or decrease (—) compared with 1926, tons	—128,234	+49,575	+1,547	+5,809	—11,753	—113,056	
Percentage	— 15.6%	+ 8.8%	+ 2%	+6.1%	—30.2%	— 6.7%	

Total Consumption of Pulp

Eliminating the exports items, which are only about 0.4 per cent of the total domestic production and imports, the total consumption of pulp in the U. S. A. for the last three years would be:

Following the heavy increase in consumption between 1925 and 1926, which increase was most conspicuous in unbleached sulphite (+ 13.2%) and sulphate or kraft (+ 23.7%), it was but a natural thing that the year 1927 should bring about a readjustment. This readjustment in tonnage of domestic production and import was followed by a marked decline in prices, especially in groundwood and unbleached sulphite pulp.

Decline in Ground Wood Prices

The decline in prices of groundwood in the U. S. A., beginning during the early part of the year, averaged about $5 per ton or about 15 per cent, whereas the decline in the English market was about double. Canada, being the principal exporter of groundwood to the U. S. A. realized the situation and curtailed production gradually. The English market being divided between Sweden, Norway and Finland, was opposed to the keen competition, and as a consequence the Swedish and Norwegian mills held a convention during the early part of the summer for the purpose of curtailing production by 100,000 tons (dry weight), which had a slightly stimulating effect on the market as far as price cutting was concerned.

The Influence of News Print

Conditions in the newsprint market were, of course, to a very great extent responsible for the situation in the groundwood market, as well as the heavily increased mill capacity in Sweden and Norway, and the unusually good supply of water throughout the year.

Unbleached sulphite, being also influenced to a large extent by the conditions of the newsprint market, the consumption in the U. S. A. of this pulp decreased considerably, affecting the domestic production with a decrease of about 80,000 tons and the import from Canada with a decrease of 60,000 tons as compared with 1926. On the other hand, the imports to the U. S. A. from Sweden were increased by about 37,000 tons of unbleached sulphite whereas imports to the U. S. A. from Germany and other countries in Central Europe were decreased by about 35,000 tons. The total decrease of consumption of unbleached sulphite according to statistics available, amounts to about 142,000 tons in 1927 as compared with 1926, which seems rather large and leads to the reflection that the available figures for 1926 might be somewhat high, and it appears rather doubtful that there should be an increase in the U. S. production of about 120,000 tons between 1925 and 1926.

The prices declined from about $60 to $50 and in many instances below these figures, or equal to a decrease of about 17 per cent, which condition prevailed until the end of the year chiefly pending sales of spot lots on hand and offerings from a few countries as low as $46,-$47.

Curtailment of Production

The only remedy for this situation appeared to be—curtailment of production. The rescue of the market came in the critical moment, spontaneously through labor difficulties in Sweden, which caused the closing down of the mills from January 2, 1928, and owing to this, the production of unbleached sulphite pulp is curtailed by approximately 2100 tons a day, and since the situation at present is still unaltered, the balance between supply and demand has already been adjusted, and as a consequence high prices should result in the near future.

Increase in Sulphate Pulp

Sulphate pulp shows a very decided upward trend as far as the U. S. consumption is concerned. The average annual increase is about 16.5 per cent for the last five years and the domestic production has been increased by 21 per cent as an average for the same period. The import production has increased only 12 per cent on the average.

Prices Better Stabilized

Prices are better stabilized in sulphate pulp than in any other grades owing to better organized selling in Sweden, and since the closing down of the mills, the production of this grade was reduced by about 1300 tons per day. There was, nevertheless, a re-adjustment of prices also in this line, from about $58 per ton early in 1927 to $50—$54 at the end of the year, but as there are not excessive stocks on hand anywhere, the outlook is that the present price will be continued for some time, and if the Swedish lockout continues, higher prices on all grades can be expected.

HUDSON RIVER MILL PLANS

The first definite news of the plans of the International Paper Company to become available since the recent closing down of five machines at the Hudson River Mill, is the statement of John P. Lundrigan, industrial superintendent of the International Paper Company, that the shutdown is only temporary. Mr. Lundrigan, speaking before the Corinth Chamber of Commerce, said that the machines now idle will be reconstructed to make a special paper such as is being made at the Fort Edward mill. He stated that the machines will be started up in the near future and that it is the plan of the company to operate the Hudson River Mill at capacity.

The five machines which were closed down and which had been operating on news print are now undergoing the necessary changes to permit the manufacture of paper other than news print. A large force of mechanics are engaged in this work which is being rushed to completion. The shutdown of the five machines at the Hudson River Mill and the closing of the pulp mill of the Curtis Manufacturing Company have temporarily thrown 350 workers out of employment.

TO DISCUSS PAPER ON THE COAST

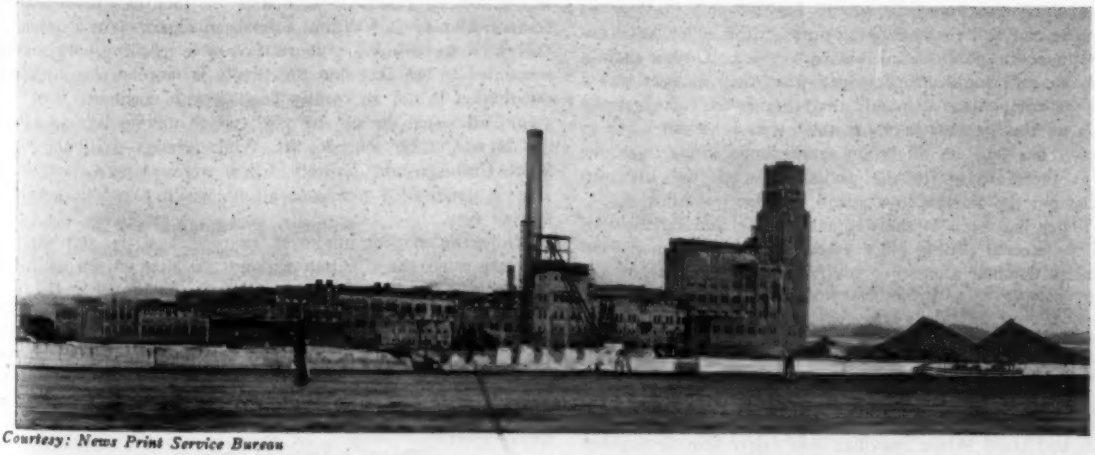
A symposium on the wood pulp and paper industry of the Pacific Northwest, will be a leading feature of the Pacific Northwest regional meeting of the American Chemical Society, to be held in Portland April 6 and 7.

Dr. Robert Eccles Swain, head of the department of chemistry at Stanford University, will be guest of honor and principal speaker.

B. T. McBain, paper mill engineer, will address the assembly on "The Future of the Pulp and Paper Industry in the Pacific Northwest." Dr. H. K. Benson, head of the department of chemical engineering at the University of Washington, will speak on the co-operation of colleges and universities with industry, with especial reference to the pulp and paper industry.

One-half day will be devoted to visiting manufacturing plants in and near Portland. F. L. Cooper will conduct a group to the plant of the St. Helens Pulp and Paper Company at St. Helens, Oregon.

THE FIRST PAPER MILL IN THE CITY OF QUEBEC



Courtesy: News Print Service Bureau

ANGLO-CANADIAN PULP AND PAPER MILLS, LIMITED

Paper Stock Trade Generally Dull During 1927

With Exception of Slight Flurry Due to Holiday Buying, Mixed Papers, Manila and News Were Quiet Most of the Year—Kraft Paper Was Probably the Most Outstanding Grade of the Period, Maintaining a High Level Throughout Entire Year—Rag Market was Rather "Spotty," Demand for New Cuttings Coming Nearest to Normal—Old Rags Suffered From Lack of Business Among the Mills

Written Especially for Annual Number of Paper Trade Journal by Walter R. Hicks, of Daniel M. Hicks, Inc.

Oh where, Oh where has the market gone,
Oh where, Oh where has it gone,
With the buyers short
And the sellers long,
Oh, where, O where has it gone?

"WILLFUL waste is woeful want" and we are in the waste business willfully and woefully. We handle scrap material but Tex Rickard is the only one that ever made a fortune handling scrap material. We may have developed a few overweight champions and a few shortweight champions but we have yet to produce a premier paperweight champion. Our immortal Lindbergh spanned the Atlantic, the most glorious achievement of all times, and, when he demonstrated that he did not do it for profit, he was hailed a mighty hero all over the globe. We have been engaged in a life's work for years without a profit and, although we have autographed rejections and cancellations, we fail of public recognition.

Figures show consumption increases each year, and, if we don't get the Tuberculosis League to work, we will all perish of consumption. The more we produce the less we make and, according to this theory, our waste measurement may prove out bust measurement. Work is man's estate. We do not grumble at the physical energy expended. Ordinarily man is happy in the performance of his task but the result is what governs the degree of happiness.

We are a part of a great industry and our success should be governed by the prosperity of that industry. The well established mills are making money and we should share in that profit. The manufacturers are on record to this effect as they are interested in putting the business on a sound basis. They realize that in order for any business to survive, the individual concerns must operate at a profit. They know that on a healthy basis it would mean standardization of quality, stabilization of price, and the guarantee of a fair return to an essential part of their business.

Under existing conditions it is the buyer's duty to buy as cheaply as he can and the insistent offers of the seller have enabled the buyer to purchase at his own price. Under such a system no one mill could afford to pay what they thought was a fair price, as competition demands that they must cover on the same basis as their competitors, or they would be out of line, all of which has had its effect on market quotations over the year. It is therefore up to the packer to work out his own problem and put the market on a sound footing.

Waste Paper has been in the dumps, actually and figuratively, as that is the eternal resting place of deceased papers on a dead market unless damned altogether to the everlasting fires of the incinerator.

Mixed Papers, Manilas and News were quiet most of the year, with the exception of a slight flurry during the period of holiday buying. Kraft Paper was probably the outstanding grade of the year as it maintained a high level over the entire year, receding slightly after the annual shutdown at the first of the year. Soft and Hard White Shavings held fairly firm throughout the year but also showed a decline after the first.

Our efforts in Books and Magazines met with little or no success. It lacked even literary value, as the criticism of the mills for the most part can be summed up in that harsh word "Rubbish." We have the people on one hand demanding Trash and the mills on the other hand rejecting Trash, and, no matter what the claims of the authors may be, they are exceeded only by the claims of the mills. The only consumer of Waste Paper that never kicks is the Goat, and we must realize there are very few of them left in the paper industry. In spite of all this there has been a decided improvement in the Book market, with steadily advancing prices, until we find them higher to-day than they have been for several years. This may be accountable to the fact that low prices that prevailed for so long discouraged the collection and most Books that were handled were sold mixed to mills having their own sorting plants, as the low prices did not permit sorting on the part of the packers. A scarcity of repacked stock followed and, when the mills requiring graded stock came into the market, values naturally increased. Ledgers and writings maintained fairly high levels over the year, and the market is firm at the present writing.

The Rag situation is difficult to analyze. The fine mills that once hummed in good old Rag Time are suffering from the Jazz craze for the fickle public is content with paper that, while it may have a Rag tone, is only Jazz in performance. New Cuttings have come the nearest to a normal demand but Old Rags, with the exception of the Wiping grades, have suffered from a lack of business among the Rag consuming mills.

Roofing mills were without a doubt the biggest factors among the Rag consuming trade but they were able to keep the market within bounds, as the absence of other mills left the field pretty much to the Felt makers. With the possible exception of Roofing, the supply of domestic Rags seemed to be ample to meet the current demand of the mills. Less Rags were imported than in any preceding year. As a matter of fact we have heard that some grades of Old Whites have been exported to Europe.

New Rags enjoyed a more favorable position. This may be accounted to the fact that the supply is more or less limited and the market is not so readily flooded with cuttings. Raw Cotton values advanced during the year, which always has an effect on the New Cutting market, the White grades particularly. Both Shirt Cuttings and Hosiery Clips were shipped to the other side in good sized tonnages, all of which aided in keeping the market firm.

While the market might be characterized as dull we cannot properly cover the situation without touching on the salient point that largely contributed to the dullness. As hinted in the opening canto of this recital the condition of the market was largely the result of unintelligent operation. The mills know their costs. They operate up to the demand and not beyond it, study the grades that are marketable and manufacture them. The majority of the packers have no idea what is going on. They simply grind away and trust to luck.

When all is Dunn and Bradstreet,
When another year's rolled by,
May every Paper Stock House
Rate, at least, "ONE MILLION, HIGH."

Paper Maker's Chemicals Enjoy Good Year

Volume of 1927 Business Proved Generally as Large as In Preceding Twelve Months and In Some Special Lines Was Considerably Heavier—Production Was Expanded Moderately In Order to Keep Pace With Increased Demand—Caustic Soda, Soda Ash, Chlorine, Sulphate of Alumina and Salt Cake Were in Particular Good Request Throughout Year—Prices Slightly Lower For 1928 Delivery.

Written Especially for the Annual Number of the Paper Trade Jurnal by Guy a Gardner, Mgr., Chemical M. Gottesman & Co., Inc.

PAPER maker's chemicals, although they experienced their usual ups and downs, had on the whole a very satisfactory year during 1927. The volume ot business generally was fully as large and in some special lines considerably heavier than in the preceding year. While the increase in production was not as marked as in 1924 and 1925, still a moderate expansion in operations took place in order to keep pace with the increasing demand from the various industries.

In the early months of the year, the market was firm, price changes being few and then only of small interest to the contract buyers while shipments were going forward at a satisfactory rate, particularly withdrawals against contracts. Notably, such items as Caustic Soda, Soda Ash, Chlorine, Alum and Salt Cake were in good demand. This condition was maintained well into the summer months, but early in the Fall selling pressure in some lines caused price shading on spot shipment.

When the contract season opened, manufacturers generally made slight price concessions for 1928 contract delivery on some chemicals largely used by the paper makers. It cannot be said that these reductions were forced by lack of demand, as consumers had been taking deliveries in good volume at the old prices, but the manufacturers evidently felt that small reductions were in line with the general market trend and would induce the buyers to place their contracts early for 1928 rather than pursue the "watchful waiting" method until after the turn of the year.

That this policy was effective is indicated by the fact that during the closing months of the year, buyers generally contracted heavily at the new prices, showing entire confidence in the stability of the market for the next twelve months as opposed to the hand-to-mouth methods which were only too prevalent in the past two or three years and also indicating their belief that the trend of prices will be on the upswing in the near future. From all indications, the chemical consuming industries are looking forward to a good year and it is safe to assume that the chemical industry will enjoy its full share of prosperity during 1928.

Bleaching Powder

There has been no change on Dry Bleach from the 1927 price levels. Contracts were booked for this year at $2.00 per 100 lbs. f.o.b. works in carload lots and a very satisfactory volume of business is reported as having been placed for 1928 delivery.

Sulphate of Alumina

A steady demand for paper makers' alum, both the commercial and iron-free grades, was maintained during the year. No price changes of any consequence were made, with the exception of some shading of quotations on the iron-free quality during the latter half of the year.

Chlorine

The new schedule for Chlorine is based on a price of 3-½ cents per pound f.o.b. works in tank cars for shipment on contract. This price represents a reduction of 1-2 cents per pound toward shorter commitments by buyers has also influenced more uniform operation throughout the year, the survey showed.

from the prevailing quotations during 1927. While the consumption of Chlorine has greatly increased in the last few years due to several new uses having been found for it, still production has kept pace with the demand and improved methods and larger production made this lower price possible.

Caustic Soda

A general reduction of $2.00 per ton on Caustic Soda went into effect for 1928 contract deliveries. A large contract business has been booked at the new price and reports indicate that export sales have been increasing in volume.

Soda Ash

The contract prices for Soda Ash over 1928 are fractionally lower than the 1927 schedule, the reductions applying principally to the light ash in bags.

Sulphur

The market was firm during the entire year. Price levels were steadily maintained and an increasing demand was experienced from both Domestic and Foreign buyers.

Salt Cake

The use of Salt Cake in various industries has increased considerably in the last few years while on the other hand, the production has decreased, due to many wartime plants having stopped operations and also to the increasing production of Synthetic Nitrogen which is rapidly replacing the use of Nitrate of Soda. These conditions prevented any large accumulations of unsold tonnage, and as a result, the market has been firm with a tendency to rising prices.

PAPER PRODUCTION IN NEW ENGLAND

The annual production of the paper and wood pulp industry of New England amounts to approximately $260,000,000 and the mills employ more than 40,000 workers, according to a survey made by the U. S. Department of Commerce in co-operation with the New England Council. The survey did not include concerns engaged in the conversion of pulp as it comes from the mills.

New England contributes about 28 per cent of the country's paper and pulp production, the figures for 1923 show. This was a decrease of five per cent from the 1914 figures. The total value of the New England production increased 131 per cent from 1914 to 1923 whereas the increase for the country was 173 per cent.

The survey revealed that there is less tendency in the paper and pulp industry to change management than in other New England industries so that the average period of the present management was found to be 23 years and the average age of the mills reported was 28 years. A few had been in operation over a century but only one was started within the past nine years.

The primary reason given by the group of mills in the survey for locating in New England was the proximity of raw materials and water power, although a number of producers emphasized the importance of the nearness of markets.

Paper Industry Expands on The Pacific Coast

Year 1927 Was One of Successive Surprises But According to Data Now Available It Will Be Outdone by Pulp and Paper Mill Developments During the Current Year—This Year It Is Estimated That There Will Be an Aggregate Capital Investment of Around Half a Billion Dollars in Pulp and Paper Mill Projects From Timber to Finished Product—1928 Is Expected To Be Year of Surprises.

Written Especially for the Annual Number of the Paper Trade Journal by C. R. Berry

THE crystallization of a number of the "on paper" projects that had been in the promotion stage awaiting the rounding out of their financial budgets has caused a no small whirlwind of interest in the money marts of the West Coast metropolises and also made a new record for major capital accumulation that may turn the tide of paper trade investments from the East to the West.

A review of the past year evidences all of this in an unmistakable manner. A small but potential number of financing concerns have, in the past year, established themselves in western cities, and pulp and paper mill engineers and technicians, representing all of the varied phases of the industry from the forest and hydroelectric engineer to the production engineer and paper finisher, are to be found in every important city on the Coast; these experts and trained operators many of them representing Eastern parent concerns have now covered the field in such an efficient manner as to render it unnecessary for any project initiated in the West to want for ready assistance in the development of its business.

What may be considered as epochal in the progress of the pulp industry of the Pacific Coast, was the shipment by water last December of a cargo of pulp to the Atlantic seaboard. This shipment, made from the new Longview Fibre Company's mill at Longview, Wash., inaugurated, unostentatiously, the beginning of production for other than local consumption.

Increased Production and Stabilized Prices

It is encouraging to note the upward trend of production has had no depressing effect upon prices; the consumer apparently is satisfactorily settled upon the price bases "as is" and would be as greatly disturbed by a cut in price as by a price advance, particularly the publisher and printer whose cost system is thrown out of balance in either case.

That no change in the "temperature" of the industry in the West was noticed as the mammoth new mills of Eastern Canada started into production last year, was somewhat remarkable; but if any effect was noticed, it was the added zest it gave to western developments and with no fear expressed that West-made pulp will go a-begging.

No Price Fixing Necessary

So long as stocks are moving,—no matter how slowly, Coast producers of pulp need not to be alarmed as to a panicky market. Prices necessarily are created in the East, but not "fixed." This is entirely superfluous and for the simple reason that at the price the Eastern consumer is asked to pay for Canadian pulp products, the Western pulp mill can produce at a profit, plus a higher quality of product. Quality ever was the best sales agent and the absurd idea of inaugurating a "price combine" on the Pacific Coast is as utterly out of tune as Free Trade now is, and those who some few years ago were responsible for the attempt at such a move, were not very popular.

Timber Growth High Class

One of the principal reasons for the condition as outlined is the higher quality of pulp products from Western timber. To justify this assertion it is perhaps necessary rather sharply to differentiate between Eastern Canadian pulp timber and that of the Pacific Coast. The latter, as a general thing, is of a whiter color, sap stain is much less and the fiber is considerably softer. These characteristics in pulping processes are distinct advantages since the Western wood does not require such a strong bleaching agent and less chemical in the cooking or digesting processes.

A tree up to twenty-four inches in diameter at the stump contains possibly twice the amount of black knots (pin knots) per cubic content that a tree forty-eight inches in diameter contains; these being, in a general way, fair diameter averages of Eastern Canadian and West Coast pulp wood species. The superior quality of Pacific Coast pulp as it becomes more generally recognized as being such, will force the attention of Eastern mills—not rapidly, let it be known, but eventually; and then such differences as higher cost of transportation and quantity production will be adjusted by the very laws of economics by which the industry is held in balance.

Significant Move of Timber Industry

In an analysis of some of the more vital changes affecting the timber industry of the Pacific Coast during the past year, one of the most significant—and, in all likelihood, the most far reaching, was that of the—almost supernatural—raising of the lowly and despised Western hemlock to the dendrological pedestal of fame. Vast stands of the finest hemlock (and Western hemlock really is a wonderful wood) that loggers from the days of the mythical Paul Bunyan skirted around as if every Tsuga was a plague spot, now almost with reverence, count and cruise and tally and total them for both present and future utilization as pulp timber. This remarkable swing to favor has not been as noticeable as has been the upbuilding of half a dozen fine pulp mills, but the economic significance of the change is tremendous, for there are many billions of feet—millions of cords of this species in the North Pacific territory, almost all of which will eventually be ground or digested into the finest pulp it is possible to make of wood; some, the select, undoubtedly will be utilized for flooring as its remarkable qualities as such become more generally recognized, but this latter industry will most harmoniously fit in with the pulp mill, as some concerns are already preparing for it.

Past Year One of Realization

The new mills of the past year were realizations of carefully worked out plans. Pretty well described and detailed in the Annual Mill number of PAPER TRADE JOURNAL, they require no reintroduction and the last of them to go into production has been in operation at least two months. Revisions and alterations have been astonishingly few, giving proof of the fact that no haphazard methods were employed in the development of each.

Marketing connections generally were arranged far in advance of commencing operations and most of the new as well as the mills longer established have their output contracted for and no complaints are heard as to cancellations. It might safely be stated that every one of the pulp mills which started operations during the past year are meeting with the measure of success each had anticipated.

Where the small capacity pulp mill has been developed upon

the sole utilization of mill waste, profits have not been as great as hoped for. Mill waste is mill waste and what does not make a respectable piece of lumber or box shook, has rather an uncertain future; if too knotty or too shaky to make No. 3 Common, or No. 2 Box Shooks, the chances are it will not pass a very high quality test for pulp wood. This fact has forced much culling and selecting, necessitating additional labor of handling, which runs the manufacturing cost of the finished product up to an alarming degree.

The fault can be and is being corrected in most instances by the inclusion of forest wood with the mill waste. This practice permits of less selectivity of the waste, as the higher percentage of clear in the forest woods offsets the lower grade of the waste wood.

Mills Increase Capacities

A number of the mills of the Pacific Coast have increased their production of pulp and paper during recent months. The Powell River Company, Ltd., is now manufacturing nearly 500 tons of news print paper daily and now is the largest capacity single unit paper mill on the Coast. The Crown Willamette Paper Company is a larger producer, perhaps, having a greater aggregate tonnage from its three large plants. The Washington Pulp and Paper Company, under the added capacity of another machine, and the Pacific Mills, Ltd., are not far behind the foremost in daily tonnage. The St. Helens Pulp and Paper Company, making an excellent grade of kraft stock, under the able direction of Max Oberdorfer is operating on a near-100 per cent capacity schedule and it is reported that an addition is planned for the near future.

These are but examples of the upward tendency of the paper manufacturing industry in the Western area and which is reflected more or less by all.

Promotion Quite Necessary

While inopportune promotion in the early stages of project development generally results in either the new project dying prematurely or corrected by a change of control, in any event the concerns which are successfully established have so become successful because of a distinct need to be filled and not by reason of their being a "good promotion." However, the promoter or promotion agent is not to be regarded as an evil genii in the West, or as an unnecessary factor. In this particular, the West may differ from the East. Promoters, or those who "whip into shape" are quite necessary in the far flung Pacific Coast states where capital, distant as it generally is, demands a complete picture of the project—a moving picture in fact,—from the standing tree to the bale of pulp or the roll of paper. To do this requires much labor—engineering effort, securing of options, serial picturization and a hundred things that make up the ordinary project having so many ramifications as does this particular industry. It is indeed a serious mistake to assume that the promoter should be eliminated as there is not one mill in the West today but that did not at some stage of its development employ the promoter and enjoy the benefits of promotion.

There are now, so to speak, not less than seventeen projects on the West Coast in the "promotion stage." Some of them have advanced and are near the crystallization point of development and there is every reason to believe that sooner or later, this entire complement of pulp or paper mill projects will be developed into successful mills. This would bring the total of mills on the Pacific slope up to sixty—not at all out of proportion when the area from Los Angeles to Juneau is considerd.

Room for One Hundred Mills?

There is no doubt ample accommodation for one hundred mills on the Pacific Coast forest area. But will that number ever be realized? The tendency is fast setting in the opposite direction, most clearly evidenced by the big mergers of Eastern Canada; and the West is a more fecund ground for breeding mergers than almost any other place on earth! It matters not whether it is a "bad thing" or a "good thing" to "gather into bundles," the "gathering" is going to grow apace and in so far as the paper industry is concerned, there is one compelling reason why it will be remarkable indeed if one hundred mills ever are established as independent units under one hundred different controls.

Control of Timberlands

The key to success of the pulp and paper industry of the West lies in the control of sufficient timbered area to assure a perpetual supply of raw material. No pulp manufacturing concern of the future may be considered as independent without its own timber supply. Year by year this economic line is being drawn tighter. Month by month the mill, depending upon the open market for its pulp wool supply will become more greatly embarrassed.

To be able to control large stands of Western pulp timber requires large capital investment. In no sense of the word is it the business of the small or underfinanced enterprise, but a veritable Armageddon in which the industrial giant must be at his best—and very nature itself ordains that the price be high. This is why, briefly, good or ill, the merging of Western pulp and paper mills reasonably may be expected in the near future.

Is Government Owned Timber an Exception?

Since it appears that the timber resource is destined vitally to influence the Western industry, it might be reasoned that the National Forest areas, government owned, are an exception to the rule as outlined and the possibile fifty per cent of the total pulp timber resources of the West, as public timber, is available for the small mill. This would happily be true were no obstacles intervening—obstacles consisting of natural barriers, of which the timber buyer has long ago taken advantage. The small timber buyer desirous of purchasing stumpage from the government soon finds that it is not feasible to get at this National Forest stumpage, which can only be gotten out by airplane without the purchase of extensive "key" holdings of private timber owners. No one is to be condemned for this condition and it took large capital and great foresight to purchase thousands of acres of timberland of debatable value and build miles of costly railroad to achieve an objective that meant either riches or ruin to the intrepid operator—and no one can deny the fact that the Western timberman has taken and still takes chances.

Merging of Lumber and Pulp Interests Result

A natural trend of a combination of interests is that of lumber and paper, largely in view of the foregoing circumstances surrounding the pulp and paper industry in a locality where the acquisition of a timber resource appears to be vital. In these days of permissible mergers—once tabooed by a Rooseveltian interpretation of the Sherman anti-trust law, such combinations of interests are a distinct benefit, both to the merging parties and the public. In this instance, large areas of timberlands in which are found both saw and pulp timber, the logging of these separately is not universally feasible. Generally, the pulp timber lies back of the saw timber and the "skipping" of the lumber material imposes a too heavy cost on the pulp material in the building of roads, extending logging lines and doing all of the many costly things necessary to a wood harvesting operation of any magnitude. Thus has an economic situation intruded, which must and will be taken advantage of.

That these predictions are not mere fancies, but have their present parallels, are exampled by the St. Helens Pulp and Paper Company and the Rainier Pulp and Paper Company, two producing mills which are operating in conjunction with large lumber mills. The new mill of the Union Bag and Paper Power Corporation, for which ground is now being broken, is, in effect, another instance, as this mill will be in tandem with the large, new hemlock mill of the St. Paul and Tacoma Lumber Company at Tacoma, Wash. Rumors are to the effect that large lumber interests are shortly to commence the erection of a 200-ton sulphate pulp mill at Bellingham, Wash., which, undoubtedly, will be coupled up with one of the large mills there.

The Willapa Pulp and Paper Company, a new organization, has taken over an extensive saw mill at South Bend, Wash., together with a large tract of pulp and saw timber, and its program is to operate both of these industries together. The Willapa Pulp and Paper Company through R. A. Swain, its president and A. E. Barry, its secretary, has inaugurated this new operating policy in a locality that, considering one of these industries alone, would not be realized; and the success of their policy already is apparent.

Newsprint Consumption Increases

What may be regarded as the most faithful barometers of paper consumption on the West Coast, is that of news print paper. Printers' papers, wrappings and paper specialties are yet being drawn from the East in fairly large quantities; but very little if any news print paper is now brought in, hence its greater value as an indicator. Complete figures are not available by which to show this increase in a general way, but the healthy growth of the *Seattle Daily Times* may ideally illustrate the upward trend of news print paper consumption on the Pacific Coast, which, in turn, quite forcefully portrays the increase in production.

The *Times,* a daily and Sunday, having the customary six editions of other metropolitan dailies, employed 2,105,000 pounds of paper in its editions during the month of January, this year, compared with 2,073,000 in January, 1927; in the *Times'* yearly consumption, increases are more noticeable; in 1924, 16,456,454 pounds were used; in 1925, 20,094 pounds; in 1926, 23,694,593 pounds and last year this advanced to 24,529,594 pounds. This newspaper is one of the most enterprising dailies on the Pacific Coast which has built up its circulation in a most business-like manner and is to be regarded as a fair criterion of what the actual, substantial increase of news print paper consumption amounts to. The *Times,* as in the case of all of the dailies, draws its material from nearby mills and the product is of the same high quality as the No. 1 news print made by Eastern mills.

Chemical Ingredients of Local Origin

Most of the chemicals required for pulp and paper abound on the Pacific Coast, rendering it unnecessary to draw from distant parts these components without which the vast pulp wood resources could not be reduced to pulp and paper. Limestone, possibly the commonest of these, is found in many instances, under the roots of the pulp timber itself; it is of a surpassing good quality as a rule. Sulphur, the most distant, can be transported by water from Texas. Talc, sizings, fillers and other chemical agents are produced here, although rosin, colors and more highly manufactured commodities are purchased elsewhere.

Half a Billion Dollars Invested

This year there will be an aggregate capital investment of around $500,000,000 in Western pulp and paper mill projects, from investments in timberlands to freight on shipments of the finished product.

The Zellerbach Paper Company, having merged with Paraffine Companies, Inc. has possibly the largest program of expansion of all, with the Crown-Willamette Paper Company's Canadian interests second, with its reported $30,000,000 project at Campbell River, B. C. The Hawley Pulp and Paper Company, through subsidiaries also has an active program outlined. Then follows individual enterprises, of which the Union Bag and Paper Power Corporation leads with a capital investment of well over $3,000,000 in mill development alone.

The year 1927 was a year of successive surprises to the industry in the West, but according to the most conservative data available, it will be outdone by mill development of the current year. This may be due in part by the momentum established last year, for otherwise, a national election year is usually conductive to a slowing up of industrial development, unwarranted and absurd as it may appear to be.

HEADS CENTRAL NATIONAL CORP.

D. Samuel Gottesman, president of M. Gottesman & Co., Inc., and chairman of the board of directors of the Central National Bank of New York, has been elected president of the Central National Corporation recently organized and which will commence operations with a paid-in cash capital in excess of $3,000,000.

The purpose of the Central National Corporation is to give to its stockholders and to the public an opportunity to participate more broadly in operations which should yield profits not directly available to the individual investor. It will deal in corporate and governmental securities and participate in underwriting syndicates, also engage in financial and other undertakings.

FINNISH PULP WELL SOLD

Finnish ground wood mills had disposed of their entire 1927 output by the end of October, and are reported to have sufficient orders on hand to keep the mills running until April. Prices are said to be unsatisfactory, and additional difficulties have arisen through the action of some competitors in quoting far under the market price.

RECENT VIEW OF CROWN WILLAMETTE PAPER CO. AT CAMAS, WASH.

News Print Continues to Expand in Canada

Dominion Mills Manufactured Last Year More Than 2,000,000 Tons, or One-Third of Total World Production—Further Large Expansions Under Way Denote That Total Daily Capacity by End of Present Year Will Amount to 10,000 Tons Daily, Equal to Annual Production Capacity of 3,000,000 Tons—Co-operative Action by Large Consolidations Curtails Output of the Mills and Maintains Prices.

Written Especially for the Annual Number of the Paper Trade Journal by C. L. Sibley.

DESPITE the fact that the year 1927 was one of extraordinary difficulties for the pulp and paper industry, there can be no doubt that it was the year of the greatest achievement in every direction which the industry has ever had in this country. The outstanding factor was, of course, the situation in regard to news print manufacture. In the face of a relatively slow increase in the market demand for news print, the most rapid expansion in productive capacity in the history of the industry took place in the Dominion, the new mills and expansions of existing mills brought into production increasing the capacity by no fewer than 1,600 tons daily, on the top of an increase in 1926 of 1,316 tons daily. As the market has at no time during the year been able to absorb anything like the productive capacity of the mills, the demand falling short of capacity by between 15 and 20 per cent., a condition of unusual difficulty has had to be faced, and this has brought about an era of consolidation unprecedented in the history of the industry, whereby production has been curtailed by co-operative action, with resulting maintenance of price and the prevention of a crisis which undoubtedly would have brought disaster to many companies, if not to the industry in general. The movement towards consolidation is not yet completed. Already it has resulted in a very large proportion of the Canadian output being brought under the control of three large organizations, and the indications are that by the time the movement is completed, the production outside of consolidated control will be negligible

While substantial progress of a constructive nature thus marked the year 1927, the industry is not yet out of the woods. For instance, the production of Canadian mills during the past year amounted to something over 2,000,000 tons of news print, which is rather more than one-third of the total world production, but further large expansions in productive capacity in the Dominion are under way, to such an extent, indeed, that it is estimated that the total daily capacity by the end of the present year will amount to 10,000 tons per day, equal to an annual productive capacity of 3,000,000 tons. Barring unforeseen developments, however, it is believed that the spirit of co-operation has so far advanced as to permit of a leadership that will bring the industry through an admittedly critical period with success, and that thereafter there will be fairly plain sailing.

A most hopeful factor in the situation is that both the Quebec and the Ontario provincial Governments are fully alive to the dangers of over-expansion, and are giving no encouragement to the erection of new mills, the Quebec Government having gone so far as to adopt a policy by which any further limits that are offered will be granted only to pulp and paper companies already in existence. Meanwhile the Hon. Charles Stewart, Minister of the Interior for the Dominion, has issued a statement declaring that the pulp and paper industry has been developed as far as it should go, adding "Until we are more certain that our pulpwood supplies will sustain the industry on a permanent basis, there is no justification for continuation of the rather hectic expansion witnessed during the past few years. Rather, the time is more opportune for concentration of effort on refinements of methods and the more complete manufacture by Canadian mills of pulp wood extracted from Canadian forests." As showing the importance of forest industries to Canada, he states that the net crop of forest products from the camps, mills and factories is estimated to be not less than $475,000,000. There are over 6,900 manufacturing establishments in which wood or paper are the basic materials used. These plants employ 125,000 people and distribute annually $150,000,000 in wages. In addition over 30,000 men are employed in the woods operations for at least a part of the year, mostly in winter when demand in agriculture and other industries is slack. Canada, he adds, is now the greatest news print manufacturing country in the world, and exports more news print than all the other countries combined.

In regard to Mr. Stewart's remarks, it may be explained that the Dominion Government has no jurisdiction over the forests in the Dominion, except those in the Prairie Provinces, all the forests in the other Provinces being under the control of the Provincial governments. His remarks, therefore, apply mainly to the forests in Northern Manitoba, where the pulp wood content has proved to be disappointing.

Consolidations in the Industry

The two outstanding developments in connection with the consolidation of the industry in Canada during the year have been the formation of a central selling agency named the Canadian Newsprint Company, Ltd., and the merging of the Abitibi Power and Paper Company interests with the Spanish River Company interests. Another outstanding development has been the vast extension of the interests of the International Paper Company.

The Canadian Newsprint Company, which has a capitalization of $5,000,000 preferred stock and 10,000 common shares of no par value, acquired the G. H. Mead Company, the Caandian Export Paper Company, and the St. Maurice Sales Company, Ltd. Through these companies, it controls the sale of a daily output of 5,000 tons of news print, being the combined production of the following mills: Laurentide Company, Price Bros. & Co., Port Alfred Pulp and Paper Corporation, St. Maurice Valley Corporation, Canada Paper Company, Ste. Anne Paper Company, Spanish River Pulp and Paper Mills, Fort William Paper Company, Abitibi Power and Paper Company, Manitoba Paper Company, and the Anglo-Canadian Pulp and Paper Company. The manager of the Canadian Newsprint Company is P. B. Wilson, vice-president of the Spanish River Pulp and Paper Company.

The consolidation of the Abitibi and Spanish River interests brought into one organization not only the parent companies but also the Fort William Power Company, Ltd., the Manitoba Paper Company, Ltd., the Ste. Anne Paper Company, Ltd., and the Murray Bag Paper Company, Ltd. These together have total assets of about $180,000,000, an immediate capacity of 650,000 tons of news print per annum, with resources sufficient to increase this capacity to 1,000,000 tons per annum, as well as developed power of over 200,000 h.p., with undeveloped water powers of 500,00 h.p.

The extension and consolidation of the interests of the International Paper Company in Canada have gone on apace during the year, under the subsidiary company known as the Canadian International Paper Company. This latter company was formed in 1916 by a special Act of the province of Quebec. The company

has a news print mill at Three Rivers of 700 tons capacity per day, a news print mill at Gatineau which will have an ultimate capacity of 1,399 tons per day, with capacity for 500 tons now installed, and the old Riordon mills at Kipawa and Hawkesbury, with a combined capacity of 400 tons of bleached sulphite pulp. In addition the International Paper Company has important pulp and paper interests in New Brunswick and Newfoundland, and has developed into one of the largest hydro-electric power interests in Canada. With regard to the company's interests in Newfoundland, during the year it took over the Newfoundland Pulp and Paper Company, in which Armstrong Whitworth & Co., the famous English engineering firm, held 51 and the Reid Company of Newfoundland 49 per cent. of the capital stock. The mills, for which the Newfoundland and British Governments acted as joint guarantors, cost nearly $50,000,000 for construction and accessories, or about 100 per cent. beyond the estimates, and had been operated for two years at a heavy loss. The International Company agreed to spend $15,000,000 on enlarging the property and for other purposes, and is allowed until 1933 to bring the capacity of the mills up from 400 to 600 tons per day of news print.

New Production During the Year

Fifteen new machines, having a daily rated capacity of 1,600 tons of news print, were added to the productive capacity of Canadian mills during the year. Of these machines, eleven were installed in the Province of Quebec, two in Ontario and two in Manitoba. The latter were put into operation at the Manitoba Pulp and Paper Company's new mills at Pine Falls, which is the first news print mill to be established in the Prairie Provinces. In the province of Quebec three new mills commenced operations, the Canadian International Paper Company's mills at Gatineau, the Ste. Anne Pulp and Paper Company's mill at Beaupre, and the Anglo-Canadian Pulp and Paper Company's mill at Quebec. In Ontario one new mill was established, that of the Thunder Bay Paper Company at Port Arthur. These new mills accounted for elevent of the fifteen new machines that were installed and brought into operation during the year, the other four machines being additions to existing plants. This month the Lake St. John Power and Paper Company's mill at Mistassini, Quebec, has commenced operations, and during the year it will be producing 220 tons of news print daily, all of which has been sold on a ten-year contract. Several other mills will come into production during the present year, construction being well advanced. The largest of these is that of the Spruce Falls Power and Paper Company at Kapuskasing, Ont., which will have a capacity of 400 tons per day, and others include the mills of the Murray Bay Paper Company and the Great Lakes Paper Company. Another mill of large extent scheduled for the not distant future is that of the St. Regis Paper Company at Cap Rouge, Que. The original plans for this provided for an output of 400 tons of news print per day, but it is now stated that the company proposes to utilize a portion of its plant for the manufacture of rayon.

Other Branches of the Industry

With regard to other branches of the industry, the situation may be summed up by quoting a review prepared by L. R. Wilson, the 1927 president of the Canadian Pulp and Paper Association. He says:

"Wood-pulp production for 1927 was greater than in the previous year, due mainly to the increased output of news print, but as regards wood-pulp manufactured for sale the situation was unsatisfactory. There was a slackening in demand from the United States and competition was very keen in that market, resulting in a lowering of prices to unremunerative levels. Canadian shipments of wood-pulp were smaller than in the previous year, except in the cases of bleached sulphite, which increased by 20 per cent., and sulphate, which was about the same. The world production of rayon or artificial silk continues to increase and Canadian mills supply a good proportion of the pulp which forms the raw material of this industry. A new mill erected by the Canadian Cellulose Company at Cornwall for the manufacture of soda-pulp came into operation during the year and marks a further stage in the development of the industry in this country, as this grade of pulp has previously been imported.

"For grades of paper other than news print the year was more satisfactory than the previous two or three years had been. The mills manufacturing these grades depend almost entirely upon the domestic market for their outlet, and the improved conditions in Canada generally have been reflected in a better demand for these products. Canadian mills are equipped to supply practically every grade of paper used in this country, and the quality does not suffer in comparison with the products of other countries. It is to be regretted, however, that the Customs returns continue to show large amounts of paper imported into Canada which could with advantage be manufactured by Canadian mills. In the fiscal year ending March 31st, 1927, the imports of paper into this country were valued at $11,359,582, a sum which, if it had been used to purchase Canadian-made paper, would have meant a considerable outlay in wages and in many other directions and would have added to the prosperity of Canada as a whole. Exports of these grades of paper are not very large, as the severe competition experienced in overseas markets from European producers leaves a very small margin of profit. Exports of book paper, however, showed a good increase, and larger shipments were sent to Australia and New Zealand."

Scientific Progress in the Industry

From the scientific point of view marked progress has taken place in the industry in Canada during the past year. It is said that the successful introduction of the Minton Vacuum Dryer into the mills of Price Bros. & Co. marks probably the most important development in the design of paper machines for a century. Then a new type of centrifugal screen has been successfully installed in some of the newer mills; the operation of paper machines without deckles has been definitely established; the artificial grinder stone is in successful use; and the world's widest paper machines, the 270-inch machines at the International Company's mill at Gatineau, have been brought into operation. Another great forward step has been the building of the new Pulp and Paper Research Institute at Montreal, which will be completed by April next. This building has been erected by the Canadian Pulp and Paper Association in co-operation with McGill University. These two will co-operate in the work to be carried on in the Institute in scientific research and its practical application to the industry. The Institute will also form the headquarters of the Canadian Pulp and Paper Association.

Quebec Loses Labrador Territory

By a decision of the Judicial Committee of the Privy Council, sitting in London, Quebec, during the year definitely lost title to a large slice of Labrador which it had come to look upon as its own. Newfoundland was awarded clear title deeds to a territory on the mainland of British North America covering no less than 110,000 square miles, or about twice the extent of Newfoundland itself. This territory had hitherto been regarded as a portion of the Province of Quebec. It includes forests of spruce pulpwood roughly estimated to have a value of $250,000,000, and the whole of the Hamilton River, including the Grand Falls, which are 900 feet in height, and capable of producing millions of horsepower of electric energy. Newfoundland is now proceeding actively with negotiations for the development of the pulpwood resources of this region.

Forest Conservation

This past summer the writer was visiting a spot in the Laurentian Mountains about 90 miles north of Montreal. One of the owners of a summer cottage there raked up a small heap of rubbish in his garden and set fire to it. Within 15 minutes the sound of a galloping horse was heard on the road, and there dashed up a

forest ranger who asked for the man's permit to start a fire. Of course he had none, and he was ordered to extinguish the fire immediately. Whether or not a fine followed the writer does not know, but the incident was a striking illustration of the rigorous system now in force for the protection of the forests against fire. The smoke had been sighted from a lookout plainly visible against the skyline on a distant mountan. Thence by telephone the lookout man had communicated with the nearest mounted ranger, and the fire was extinguished before there was any possibility of danger to the surrounding forest. If the fire had actually been in the forest itself it is possible that an aeroplane with fire-extinguishing appliances would have been over the spot in quick time.

No one in forest regions in Quebec and some of the other provinces is now allowed to light a fire without a permit, and all sportsmen and others who enter the forest must have a permit. Lookout stations are established everywhere, and hundreds of miles of telephone wire are stretched through the forests to keep the rangers in touch with what is going on. Settlers, of course, require to burn slash at intervals, but are only allowed to do so on permits. An elaborate weather-forecasting system is in effect to guide those responsible in granting permits. Sir Frederick Stupart, the head of the Dominion Meteorological Service, says: "Forecasts have been extended during the past season to the Province of Quebec, so that the service now covers British Columbia, Alberta, Ontario and Quebec. Negotiations are under way with the remaining provinces, and it is anticipated that these will all be equipped and operated in 1928. In the season of 1927 twenty-four special stations operated by protection officials sent daily wires to the Bureau at Toronto. These stations are all established at selected points in the fire districts, and from this and other data a daily bulletin was wired to the protection offices every morning forecasting weather for two days, sometimes longer."

Forest officers are enthusiastic regarding the possibilities offered by this new development in scientific fire protection, and, in districts where the plan has been in use for two or three seasons, claim that the service forms the basis for the issuing of all permits to settlers and woods travellers. Also, as fire hazards do not occur in all the districts at the same time, it enables the protectionist to manage his men as mobile units and transfer them to the danger zones without endangering the areas from which men and equipment are drawn. This makes for economy as well as efficiency in fire fighting. Forecasts are also used in directing economical utilization of aeroplanes. In fact, one Province stated that it had in one season cut down its operation costs by one-half.

One of the first forms of research to be taken up by the new Pulp and Paper Research Institute in Montreal will be the question of utilizing inferior tree species for pulpwood. As for other forms of research, some of the larger pulp and paper companies are making sample plot studies of reproduction, using different logging methods, clear cutting, etc., and studying the character of reproductions. The question of land classification and the establishment of forest reserves is receiving more attention than ever before. In Quebec, for example, 225,000 acres are now being examined annually. Other provinces have also made a start, notably New Brunswick. This procedure makes for proper direction in the matter of placing settlers on land suitable for agricultural pursuits, and in preventing settlers clearing land suitable only for forests.

In addition to being invaluable for fire prevention, the aeroplane has speeded up by many years the work of surveying and classifying timber lands.

Government nurseries in Quebec and Ontario are supplying many millions of young trees every year for reforestation, and many of the larger pulp and paper companies also have their own nurseries.

No review of the pulp and paper industry in Canada would be complete without a reference of the development of water power, which goes hand in hand with the establishment of new pulp and paper mills and the extension of existing ones. Indeed, pulp and paper companies are among the largest owners of water powers in the country. Never before has there been such progress in the harnessing of water powers as in the past year. During the year the hydro-electric equipment installed represented no less than 221,000 h.p., bringing the total installation in Canada to 4,778,000 h.p. In addition other undertakings were advanced to such a stage that further total of 378,000 h.p. will be in place during the first six or seven months of the present year, bringing to total by the middle of the year to more than 5,100,000 h.p. The latter figure is just double the total installation at the end of 1920.

One of the features of the year was the construction of a line of 165,000 volts, 135 miles in length, by the Shawinigan Water and Power Company from the head of the Saguenay river to Quebec City, primarily to supply the great new paper mills of the Anglo-Canadian Pulp and Paper Company, but also, of course, for general use. Construction of another line of still greater voltage was begun during the year by the Ontario Hydro-Electric Commission to transmit power more than 200 miles from the Gatineau river in Quebec to the city of Toronto. This is designed to carry more than 250,000 h.p. at 220,000 volts, and is expected to be in operation during the coming autumn.

In installations during the year Quebec took the lead, mainly due to the activities of the Gatineau Power Company, a subsidiary of the International Paper Company. The Company brought into operation the initial installations of its Chelsea and Farmers Rapids developments on the Gatineau river, the first of 102,000 h.p., and the second of 72,000 h.p. The Company also vigorously carried forward the development of Paugan Falls, on the same river, where 204,000 h.p. is being installed. For the benefit of these developments a dam was erected creating a storage reservoir of 95,000,000,000 cubic. This reservoir was filled early in the year. Additional to this work, the International Paper Company acquired the plants and systems of the Ottawa-Montreal Power Company and the Quebec Southern Power Company, completing the enlargement of the latter's Rawdon plant on the Oureau river from 300 h.p. to 2,150 h.p.

The largest project now under construction is the 800,000 h.p. development of the Alcoa Power Company at Chute-a-Caron, on the Saguenay River. Other projects in the Province of Quebec include the addition of unit No. 11 of 45,000 h.p. to the Duke-Price development on the Saguenay river and a 65,000 h.p. development by the Montreal Island Power Company on Des Prairies river near Montreal. The Ottawa River Power Company has authorized the addition of 25,000 h.p. to its development near Bryson on the Ottawa river, and the Ontario Paper Company has a plant of 40,000 h.p. under way on the Riviere aux Outardes.

In Ontario the larger schemes under way include a 54,000 h.p. installation by the Hydro-Electric Commission on the Nipigon river, and a 56,250 h.p. installation on the Mattagami river by the Spruce Falls Company.

In New Brunswick the St. John River Power Company, another subsidiary of the International Paper Company, has made rapid progress on the construction of its 80,000 h.p. development at Grand Falls on the St. John river.

In British Columbia a number of large schemes are under way, including a 500,000 h.p. development on the Bridge river by the Bridge River Power Company and a 60,000 h.p. development on the Kootenay river by the West Kootenay Power and Light Company.

In Manitoba the Manitoba Power Company has completed the superstructure of its Great Falls plant on the Winnipeg river, and brought into operation a fourth unit of 28,000 h.p.

The numerous undertakings in the initial stages of construction and others about to be commenced will result in an addition to the Dominion total of more than 2,000,000 h.p., much of which, it is expected, will be in place before the end of 1930. The capital required for this new work will involve the direct investment at least $200,000,000, and many times this amount in the application of power to industry and domestic and public use.

Ontario Paper Industry Progresses Steadily

New Thunder Bay Paper Mill at Port Arthur Came Into Production During Past Year—News Print Plant of Great Lakes Paper Co., at Fort William, Rapidly Nearing Completion—Modern Soda Pulp Mill of Canadian Cellulose Co., Located at Cornwall, Went Into Operation Recently—Hinde & Dauch Co., Erected Straw Board Plant at Trenton to Feed Its Toronto Mill—Conserving Timber Resources.

Written Especially for the Annual Number of the Paper Trade Journal by G. W. Brock.

THE year recently closed in the pulp and paper industry of Canada was one of considerable expansion in manufacturing, of a fair degree of prosperity in wholesale marketing of the product and of a merging of a number of the big pulp and paper interests, together with organized selling activities. Consolidations were effected when the Mattagami Pulp and Paper Company was absorbed by the Abitibi Power and Paper Company, the latter company also merging with the Spanish River Pulp and Paper Mills, Limited, and taking over the Abitibi Fibre Company as well. Selling organizations of more than fifty per cent of the Canadian news print companies was effected, while control of the Provincial Paper Mills, Ltd., with mills at Fort William, Thorold, Port Arthur and Mille Roches, with a combined capacity of 170 tons of paper a day, passed into the hands of Canadian leaders in the industry after having been dominated by American interests for years. Feelers thrown out last year in other directions may result in further amalgamations during the next eleven months, designed to reduce costs and increase sales efficiency and facilities.

Ontario Developments

During the year just closed the new paper mill at Port Arthur of the Thunder Bay Paper Company came into production, while good progress was made by the Backus interests, which are behind the Great Lakes Paper Company, on a 250-ton news print mill at Fort William. This will be in operation next summer with an initial output of 100 tons. Considerable improvements were carried out at Strathcona, Ont., by the Strathcona Paper Company, in the way of new buildings and increased plant, while the Canadian Cellulose Company, a subsidiary of the Howard Smith Paper Mills, went into operation in the new plant at Cornwall, making 25 tons a day of soda pulp for the parent company. At Trenton, the Hinde & Dauch Company, of Canada, Ltd., put up a straw board plant to feed its Toronto Mill with corrugated and fibre box board and this has been running at its 50-ton daily capacity for some months. Construction was commenced of two other board mills—one by the Dominion Boxboard Company, a subsidiary of the Dominion Envelope and Carton Company, Ltd., Toronto, and the other by the Canadian Paperboard Company, Ltd. Both plants are under construction in Toronto and will be in operation shortly. In the Niagara District, the Superior Paper Mills, Ltd., got under way during the year at Thorold, with a well-equipped plant for the manufacture of light weight paper and paper specialties, while the new sulphite mill of the Fort William Paper Company went into production with a capacity of from 70 to 80 tons daily. In Northern Ontario a large amount of development took place Lakes Paper Company, Ltd. The Lake St. John Power and Paper Company, where 75,000 horse power is being developed, involving a 500-ton daily news print mill to feed the *New York Times* and a fifty mile railway to Smoky Falls. In the West, the Manitoba Pulp and Paper Co. made good progress on their pulp and paper plant which will involve an investment of $600,000. Two machines have already been installed in the company's plant at Pine Falls, Manitoba.

Generally speaking, the productive capacity of Canadian mills was increased during the year by the addition of fifteen new machines having a daily rated capacity of 1,600 tons. Of these machines, eleven were installed in the Province of Quebec, two in Ontario and two in Manitoba, the latter being the first news print mill to be established in the Prairie Provinces. In the Province of Quebec three new mills commenced operations, the Canadian International Paper Company's mill at Gatineau, the Ste. Anne Pulp and Paper Company at Beaupre and the Anglo-Canadian Pulp and Paper Mills at Limoilou, Quebec. New mills accounted for eleven of the fifteen machines installed during the year, the other four machines being additions to existing plants. Several mills are already under construction, some of which will come into operation within a few months and others at intervals during the year. The largest of these is the Spruce Falls Power and Paper Company at Kapuskasing, which will have a capacity of 400 tons a day, others being the Lake St. John Power and Paper Company, the Murray Bay Paper Company and the Great Lakes Paper Company, limited. The Lake St. John Power and Paper Company's mill, which is located at Dolbeau, Quebec, started operations in December and will have an initial capacity of 110 tons of news print and a final output of 200 tons. It is expected that during the present year the production of the new mill of the Anglo-Canadian Pulp and Paper Company at Limoilou, Quebec, will reach 500 tons of news print daily, the output to go to the London *Daily Mail* and other British newspapers. Construction of the mill started in November, 1926, and installation of equipment for paper production in July, 1927. There are four paper machines, each 234 inches wide. The plant is one of the first paper mills to use power from the new hydro-electric development at Ile Maligne, the consumption being 36,000 hp. The company's output will be sold through the Canadian News Print Company, who act as selling agents for nearly all of the larger Canadian news print mills.

Power Developments in New Brunswick

At Grand Falls, New Brunswick, construction during the year was well advanced on hydro-electric development of St. John River Power Company, and the plant is nearing completion. It will be the largest hydro-electric development in the Maritime Provinces. Designed for an installation of 80,000 horse power, it will have an initial installation of 60,000 horse power in three generators of 20,000 horse power each. The year saw a continuation of the assembly of timberland reserves for the mill which New Brunswick International Paper Company will soon build in Northern New Brunswick. Towards the close of the year, Canadian Hydro-Electrict Corporation, Ltd., a Dominion company, was organized to acquire and control Gatineau Power Company, Gatineau Electric Light Company, Ltd., and Saint John River Power Company. This marks another step in the co-ordination of the operations of these several companies which will have an effect on pulp and paper activities in the Maritimes.

Development on the Gatineau

During the year the Gatineau River development program of Canadian International Paper Company and Gatineau Power Com-

pany was well advanced and is now nearing completion of its first stage. The news print paper mill at Gatineau was completed, as were the Chelsea and Farmers Hydro-Electric plants and the Mercier storage dam. Work was pushed throughout the year on the hydro-electric development at Paugan, twenty-six miles above the Chelsea and Farmers plants, and it is expected that the first generator in the plant will be in operation and delivering electric energy in June of this year. This will be one of the largest hydro-electric plants on the North American Continent. They all comprise parts of a unified plan for the intensive development of the power and wood resources of the Gatineau River and are expected to have far reaching results in the Canadian pulp and paper industry. In this connection it is interesting to note that excavation on the Gatineau mill was started on November 18, 1925 and in 1927 the sulphite mill began production. Five days later it was followed by the ground wood mill. The first machine began making paper for shipment on April 14 of last year, seventeen months after excavation started. The second machine began turning out paper on May 19, being followed by the third and fourth machines on June 28 and August 19, and the mill was then in complete operation. The four machines have a capacity of 600 tons of news print per day and are the largest single producers of paper thus far installed in the world.

Over-Production of Newsprint

In the principal branch of the Canadian pulp and paper industry—that of news print,—there was an increase of productive capacity which was greater than the increase in demand, despite co-operation by both the Ontario and Quebec Governments to moderately stem the tide of development early in the year. It is satisfactory to note, however, that owing to wise leadership the difficulties have been overcome without disrupting the market. The wood pulp situation was not very satisfactory during the year, a slackening in demand in the United States and severe competition from the pulp-producing countries of Europe causing unsettlement of prices, which in some cases ceased to be remunerative. For other grades of paper the year has been more satisfactory, and the general improvement in Canadian business has been of benefit to mills making these grades. As to news print the productive capacity of Canadian mills was increased by 1,600 tons daily. As a result of this added capacity the news print mills were not able to operate as close to capacity as was the case in 1926, but the output for the year will probably be about 200,000 tons greater than it was during the previous year.

United States Chief Market

The principal market for Canadian news print is the United States, and while conditions in that country have been good throughout the year for the most part, there was not the big increase in general business that was experienced in the previous year, hence the demand for news print was only slightly higher than in 1926. There was also a larger importation of news print from Europe into the United States, shipments from this source amounting to 101,000 tons in the first ten months of the year, as compared with 78,236 tons in the corresponding months of 1926. The fact that production of news print by the mills in the United States fell short of the output in 1926 was of material assistance to the Canadian mills. Production by Canadian mills in the first eleven months of the year amounted to 1,900,699 tons, as compared with 1,714,020 tons in the corresponding months of 1926, an increase of 11 per cent. Canada's progress may be seen from the fact that it was only in 1922 that the output of news print for the first time exceeded one millions tons, while for 1927 it was over 2,000,000 tons, an increase of practically 100 per cent in five years. Exports of news print during the first eleven months of 1927 amounted to 1,712,663 tons, as compared with 1,575,578 tons in the corresponding period of the previous year. The bulk of these shipments, amounting to 1,593,786 tons, went to the United States, but overseas shipments showed as satisfactory increase also, Australia, Great Britain and New Zealand absorbing large tonnages.

Wood Pulp Production

Wood pulp production for 1927 was greater than in the previous year, due mainly to the increased output of news print, but as regards wood pulp manufactured for sale the situation was unsatisfactory. There was a slackening in demand from the United States and competition was very keen in that market, resulting in a lowering of prices. Canadian shipments of wood pulp were smaller than in previous years, except in the case of bleached sulphite, which increased by 20 per cent, and sulphate, which was about the same. The world production of rayon or artificial silk continues to increase and Canadian mills supply a good portion of the pulp which forms the raw material for this industry.

Other Grades Had Good Year

For grades of paper other than news print the year was more satisfactory than the previous two or three years had been and all of the plants were busy throughout the twelve months. The mills manufacturing the better grade papers depend almost entirely upon the domestic market for their outlet, and the improved conditions in Canada generally have been reflected in a better demand for these products. Canadian mills are equipped to supply practically every grade of paper used in the Dominion. In this connection, however, it is regretted that the Customs returns continue to show large amounts of paper imported into Canada which could with advantage be manufactured by Canadian mills. In the fiscal year ending March 31st, 1927, the imports of paper into Canada were valued at $11,359,582, a sum which, if it had been used to purchase Canadian-made paper, would have meant a considerable outlay in wages and in many other directions and would have added to the prosperity of Canada as a whole. Exports of these grades of paper are not very large, as the severe competition experienced in overseas markets from Europaan producers leaves a very small margin of profit. Exports of bookpaper, however, showed a good increase and considerable tonnages were shipped to New Zealand and Australia by such companies as the Provincial Paper Mills and the Howard Smith Paper Mills.

Consolidation in Favor

The growth of the pulp and paper trade continues to exercise a decided influence on the lumber industry. The pulp and paper companies are ever on the alert to acquire limits, and are purchasing available properties of old-established lumber companies wherever favorable opportunities occur. Thus during the year the Fraser Companies, Ltd., bought additional limits in the Maritime Provinces, and the Laurentide Company, Ltd., took over the property of the Pembroke Lumber Company, the Hawkesbury Lumber Company, and the Edwards Lumber and Pulp, Ltd. This is a continuation of the consolidation of the big mills, and it is significant that Col. John H. Price, president of Price Bros. & Co., Quebec, and George A. Mead, of the Spanish River Pulp and Paper Mills, have joined the board of Fraser Companies, Ltd. The indications are that more and more timber will be used for pulp and paper purposes, especially in the Province of Quebec and the Maritime Provinces. That will, of course, restrict the production of sawn spruce lumber, and to that extent the lumber industry should be benefited, as it will tend to keep supply more in accordance with the demand.

Conserving Timber Resources

During the year the movement for the conservation of the timber resources of the Dominion gathered strength. The idea that Canada has unlimited timber resources is now known to be false. These resources are being used at an unprecedented rate and the Provincial Governments are taking measures, inadequate according to some views, to prevent what has been termed the mining of timber. The Province of Quebec, in granting cutting rights on Crown lands, stipulates that only 80 per cent of the annual growth must be cut, and in connection with pulp and paper plants has

adopted the policy of licensing new limits to supplement supplies of raw materials for existing mills rather than encouraging the construction of new mills. The Province of Ontario has a definite forest policy, and in 1927 appointed a Forestry Board, the purpose of which is to carry on research work in connection with the forest; to study all questions appertaining to the development and maintenance of Ontario forest lands on a productive basis, and to advise the Minister of Lands and Forests of the necessary steps to that end. In pursuing the policy of rehabilitating and conserving the forest areas of Ontario, the province is divided into three sections; in the south the hardwood stands are being replanted; in another section, which has been thoroughly cut over, the land is to be sealed up and allowed to grow timber; and in the north, the Government is establishing an enormous spruce nursery. In October last the Ontario Government sold timber rights in Northern Ontario on land expected to yield 73 million feet. Other provinces are also taking measures to conserve the timber resources, particularly in relation to reducing the fire hazard.

Industry Has Research Laboratory

What is considered by many to be the greatest forward step the pulp and paper industry in Canada took during the year was the laying of the corner-stone of the new pulp and paper research institute at Montreal in October. The building, which is about completed, is being erected by the Canadian Pulp and Paper Association and is the culmination of years of effort on the part of leaders in the industry. Its construction was rendered possible by the co-operation of the Dominion Government, McGill University and the members of the Association, and the work to be carried on will be under the same auspices, thus providing for scientific research and its practical application in the industry. It is pointed out that many problems in the realm of pulp and paper await solution and it is felt that the work that will be carried on in the research institute will not only benefit the pulp and paper industry but the country as a whole.

MADE PRODUCTION MANAGER

The retirement of R. Frank McElwain from the Crocker-McElwain and Chemical Paper Manufacturing Companies, Holyoke, Mass., will necessitate some changes; one was announced the past week, the appointment of S. E. M. Crocker as production manager of the Chemical Paper Manufacturing Company. The announcement was made by E. C. Tucker, formerly production manager, now vice president, and who has been with the company some years. Mr. Crocker was for years production manager for the bristol section of the Crocker Burbank Company of Fitchburg. For the past few years he has not been connected with paper manufacturing. He has already assumed his new duties.

MAC SIM BAR MILL TO EXPAND

The MacSimBar Paper Company, Otsego, Mich., is planning to spend at least $500,000 to increase the capacity of its mill. That decision was reached at a meeting of the directors at which it was unanimously voted to authorize President Charles E. Nelson to take steps to have plans for the proposed enlargement prepared and submitted for consideration.

According to President Nelson, one of two plans will in all probability be adopted. One contemplates the installation of a large cylinder machine in the basement of the mill. The other is to add sufficient dryers to the present machines to bring about the desired results.

The plant is now equipped with one 126 inch six cylinder machine and one 142 inch seven cylinder machine. Their combined output is placed at 360,000 pounds in 24 hours. Originally these two machines made about 200,000 pounds of board a day and the capacity was expanded to the present tonnage through the installation of proper power facilities and by the addition of dryers. At the same time the cost of operations was not in any way increased, that is from a labor standpoint. The increase now proposed will raise the capacity to over 500,000 pounds.

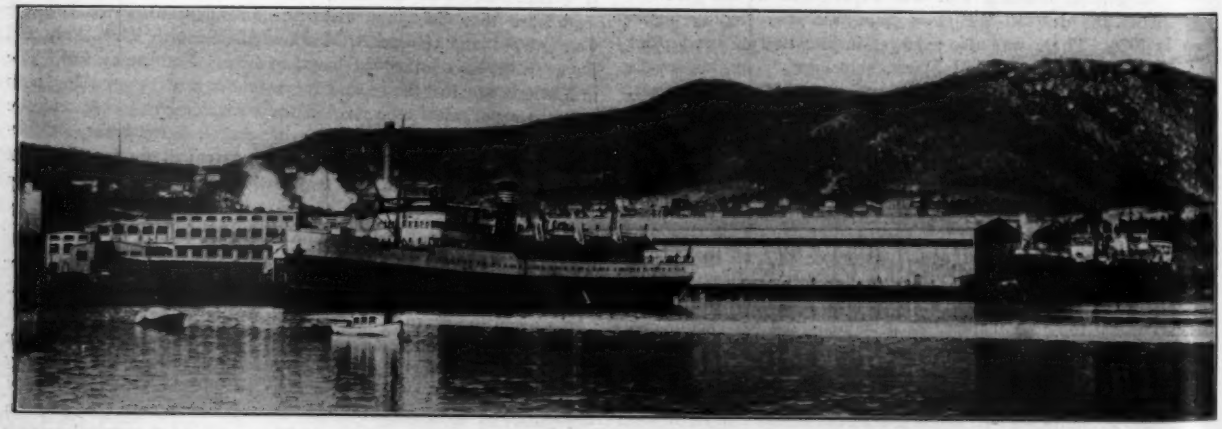
The adoption of either plan as stated will necessitate the expansion of other departments. This can easily be done, the company having been permitted to close an east and west street for that purpose, thus allowing the erection of necessary buildings. President Nelson admits it will require considerable time before definite plan of action is arrived at. The matter of comparative costs will be carefully gone into.

GOES WITH HUMMEL-ROSS FIBRE CORP.

Owing to the increasing demand for the high grade sulphate paper and board manufactured by it, Hummel-Ross Fibre Corporation, Hopewell, Va., has secured the services of "Cliff" Boswell to help market its product. His training and close touch with paper conditions covering a period of over 25 years, makes him particularly well fitted to meet the problems which his new connection will bring. Mr. Boswell has been an active member and a director in the National Paper Trade Association for a number of years. His many friends among the mills and merchants will be glad to hear he is now connected with this mill.

FINNISH PULP EXPORTS

The Finnish Cellulose Association reports an exportation of 41,309 metric tons of chemical pulp during the month of December, bringing the total for the last year up to 265,880 tons of sulphite and 67,170 tons of sulphate as against 247,002 tons and 66,148 tons respectively during 1926.



STEAMERS CORNER BROOK AND NORTHLAND OF INTERNATIONAL POWER AND PAPER CO. OF NEWFOUNDLAND, LTD., ESPECIALLY BUILT NEWS PRINT PAPER CARRIERS, LYING ALONGSIDE THEIR DOCKS

Big Dinners During Paper Week

Paper Manufacturers, Merchants and Salesmen and Technical and Cost Men Hold Banquets and Luncheons at New York Hotels

Annual Banquet of American Paper and Pulp Association Was One of the Most Brilliant and Successful Events Ever Held—Dr. Hugh P. Baker Presented With Magnificent Silver Service as a Token of Appreciation for his Valued and Lengthy Services as Secretary-Treasurer—Supreme Court Judge Rosenberry, in Notable Address Explained Administrative Law and Its Application to Business.

CLOSE on one thousand members and guests of the American Paper and Pulp Association assembled at the 51st Annual Banquet in the Grand Ball Room of the Waldorf-Astoria Hotel on Thursday evening, this notable event winding up one of the most interesting and probably the most widely attended convention in the history of the association.

The guests and members gathered early for the Reception in the Astor Gallery and promptly at 7:30 p. m. marched into the banquet hall and located their tables. After the Star Spangled Banner had been played by the orchestra, the assembly took their seats and proceeded to enjoy the excellent dinner provided, which consisted of Canapé Rubané; Potage Meurice, Celery and Olives; Escalope of Sole, Mornay, and Potatoes Gallette; Vol au Vent of Sweetbreads and Mushrooms; Mignon of Lamb, Colbert; Asparagus Tips au Gratin, Lettuce and Fines Herbs; Bombe of Orange and Praline Ice Cream, Assorted Cakes and Macaroons; Coffee, White Rock, Johnnie Walker Cigarettes, and Cigars.

The artistic menu and program contained the names and connections of the officers and executive committee of the American Paper and Pulp Association; the Banquet Committee and the Reception Committee, and the names of the Past Presidents from the beginning of the association in 1878 to 1926.

The attractive program also contained a beautiful etching of the Rittenhouse Mill, the first paper mill built in America, by William Ryttinghuisen, near Germantown, Pennsylvania.

This mill made annually from twelve hundred to fifteen hundred reams of paper, the quality of which was identified by the use of the word "Company," designating the original partnership as the first watermark in the United States.

The Rittenhouse Mill continued in operation until 1700 or 1701 when a freshet occurred which destroyed the mill. Through the help of William Penn and other Friends, a new mill was built in 1702, which was again rebuilt prior to 1770.

This artistic menu was engraved and printed by the Osborne Company, of Newark, New Jersey, on Arabis American Handcraft, provided through the courtesy of the American Writing Paper Company, of Holyoke, Mass.

D. I. Everest, president of the association, was toastmaster and seated with him at the speakers' table were: F. L. Stevens, Henry W. Stokes, M. E. Marcuse, Felix Pagenstecher, W. N. Gillett, S. L. Willson, Henry A. Wise, Judge Marvin B. Rosenberry, Rev. Dr. Nehemiah Boynton, J. C. Mallalieu, Norman W. Wilson, Magnus W. Alexander, A. G. Paine, Jr., Harry W. Mathewson, A. C. Hastings, George W. Sisson, Jr., and Dr. Hugh P. Baker.

Before introducing the speakers, Mr. Everest took advantage of the occasion to congratulate the National Paper Trade Association on reaching its 25th Anniversary and expressed the wish that the association would round out many more quarter centuries.

The toastmaster reminded the audience of the fact that during the past year the association had been regretfully forced to accept the resignation of Dr. Hugh P. Baker as Secretary-Treasurer and called on Past President George W. Sisson, Jr., for a few remarks.

Mr. Sisson paid a warm tribute to the former secretary-treasurer and spoke feelingly of his long and valued services to the organization. On behalf of the executive officers and members he presented Dr. Baker with a magnificent silver service and called on the gathering for a rising vote of thanks, which was given.

In expressing his sincere gratitude to the executives and members of the American Paper and Pulp Association, Dr. Baker declared that his connection with the organization had been a great experience for him and praised the cooperation he had received during his long term of office. He spoke with feeling of the many valuable friends he had gained and expressed the hope that he would be able to materially assist the association in his new sphere at the United States Chamber of Commerce.

In a few well chosen remarks, the chairman then introduced Marvin Bristol Rosenberry, Justice of the Supreme Court of Wisconsin, who gave a thoughtful and instructive address on "Administrative Law and Business:" He said in part:

"I appreciate the fact that one who undertakes to interest a group of laymen in the discussion of a legal problem sets himself a difficult task. You gentlemen are here from every part of the country for the purpose of promoting your mutual interests as related to transportation, supplies of raw materials, technique in your business, and the orderly marketing of your products. It should not be an imposition to ask you to give your attention for twenty or twenty-five minutes to some of the great fundamental changes which are taking place in the structure of our legal system as well as in political theory in this country.

"It is my thesis that the further growth, development and application of administrative law in this country is a matter which concerns intimately and directly each one of you. By administrative law is meant that body of law which has come into existence by statute and decision relating to boards, bureaus and commissions, prescribing their structure, powers and functions and fixing the limits of administrative regulation and control. When is a business affected by a public interest so that it may become subject constitutionally to legislative regulation? It is practically impossible to lay down any rule or principle by which what may happen in this field ten years from now may be predicted. The business of a common carrier has from the first been recognized as one affected with the public interest. The insurance business has long been so recognized; the business of slaughtering animals for food is directly concerned with public health and so subject to regulation. The activities of companies supplying light, heat and power to the public have long been conceded to be properly in the field of governmental regulation. If one were to classify the various activities which have been regulated and attempt to deduce therefrom a rule he would find that the basis of regula-

PICTURE TAKEN AT THE FIFTY-FIRST ANNUAL BANQUET OF THE AMERICAN PAPER AND PUL ASS

D PUL ASSOCIATION AT THE WALDORF-ASTORIA HOTEL, NEW YORK, THURSDAY EVENING, FEBRUARY 23, 1928

tion was neither in the nature of service performed, the size of the unit regulated, nor any other single attribute. It seems apparent that when in the legislative mind a situation arises where regulation is thought to be necessary, the legislative determination in that regard is practically conclusive. Who would have thought twenty-five years ago that the legislatures might regulate the relation of landlord and tenant to the extent of fixing rental values? That idea grew out of the war but it survived the war.

"The greatest danger that we have to fear, in my judgment, is that noisy and clamorous minorities will attempt to force upon the public their economic opinions through the medium of administrative agencies. There is a constant temptation to go beyond regulation into the field of management. Reduced to its simplest terms it is an effort to acquire and exercise power.

"May I close with this suggestion: that it is a duty of every citizen to give some part of his time and talents to the public service. The development of administrative law opens a way by which our government will tend more and more strongly away from the constitutional to the parliamentary system. We should recognize the facts as they exist, realize the inevitableness of the further growth and development in this field of governmental activity and endeavor, not in our individual or personal interests, but in the interest of the general welfare to so guide it and so limit and circumscribe its development that it will be an aid to further progress and not a Frankenstein which may destroy its creator."

The Rev. Dr. Nehemiah Boynton made an intensely patriotic address, which, however, was not without its humor. In an impassioned eulogy of George Washington, the "Father of His Country," he described the outstanding characteristics of our first president and declared that he was productive, resourceful and generous.

Dr. Boynton congratulated the association on the developments of the past year and wished it success in the forthcoming year. Touching religion, he said that the Bible was the best friend that the paper industry ever had. He also talked extensively on travel and business and interspersed his remarks with numerous witty stories and rhymes.

TECHNICAL ASSOCIATION BANQUET

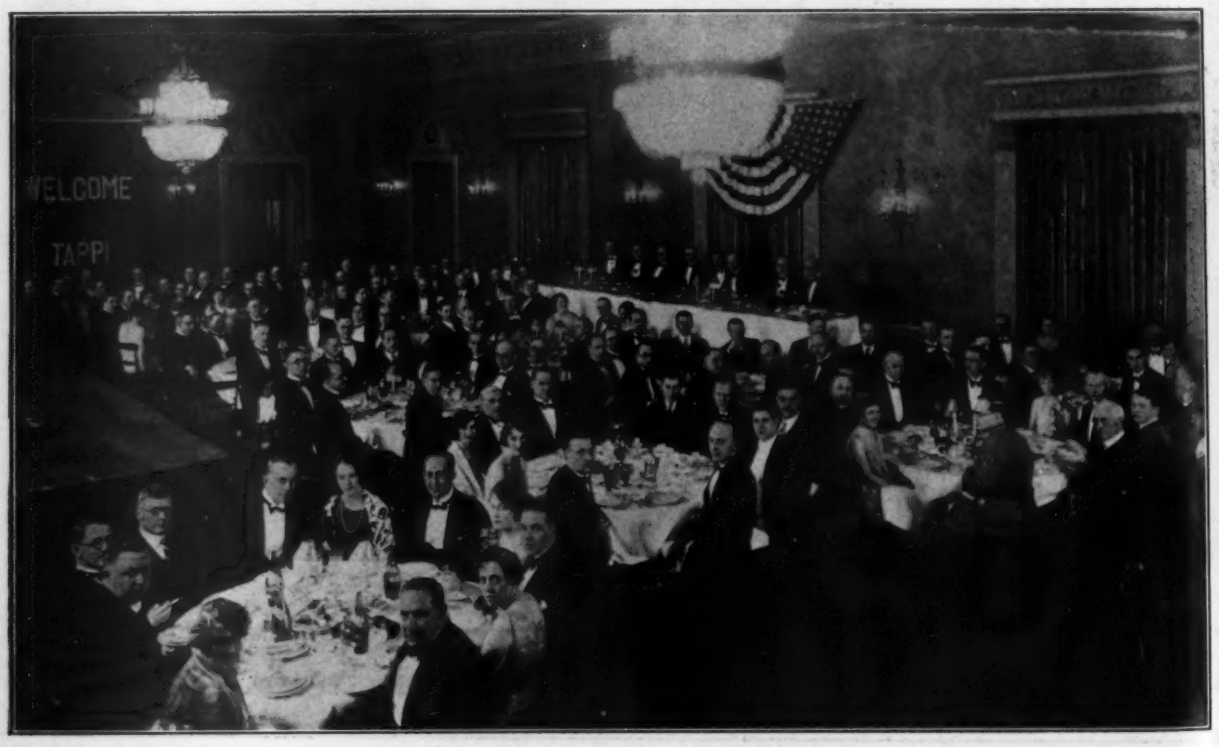
The thirteenth annual dinner of the Technical Association of the Pulp and Paper Industry was held on Wednesday evening at the Hotel Commodore, with several hundred members and guests present.

By way of special entertainment this year, those attending were treated to a little "touch of Scotch." Preceding and during the dinner the guests listened to bag pipe selections by Angus McMillan Fraser, pipe major of the Lovat Pipe Band. While the dinner was in progress Mr. A. E. Campbell also entertained with some song selections, while Miss White and Miss Wilson introduced some typical Scotch dances.

E. C. Tucker, president of the Technical Association of the Pulp and Paper Industry, presided as toastmaster, and with some very appropriate and pointed remarks introduced the speakers of the evening. These were Dr. Edward R. Weidlein and Dr. Hillis Godfrey.

Dr. Weidlein was to have made a prepared speech entitled "Organization Industrial Research." In his opening remarks, however, he stated that he would depart from this prepared form by speaking extemporaneously on the problems of industrial, chemical research work. He went on to cite the work being done by the Mellon Institute, stating that they had served several thousand firms and worked out quite a number of problems for those who made use of the Institute's facilities.

He cited various stages in the development of some of their recent work—these problems being worked out by way of advising new uses, therefore, new markets, for existing products, and not artificial creations for existing products. He dwelt on the uses of the Institute's research work, its information in general as attested to by the rapid development of interest in the work of the organization. He stated that in their organization they could not proceed along the lines of definite scientific theory, but simply solved their problems during the process of general evolution as their research work progressed in any particular subject.



BANQUET OF THE TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, HOTEL COMMODORE.

BANQUET OF THE SALESMEN'S ASSOCIATION OF THE PAPER INDUSTRY, WALDORF-ASTORIA HOTEL.

The next speaker of the evening introduced by Chairman Everest, was Dr. Hillis Godfrey, who spoke on "Education and Wealth." This subject was very cleverly handled by Dr. Godfrey and his remarks were very well received by the members present.

His topic was more or less an unusual one, but his grasp of these problems proved very enlightening from an economic standpoint.

PAPER SALESMEN'S BANQUET

Good fellowship reigned supreme at the ninth annual banquet of the Salesmen's Association of the Paper Industry held on Monday evening in the Roof Garden of the Waldorf-Astoria. President James H. Coy made an efficient toastmaster.

Whimsical, different, practical, with bits of idealism, shafts of mild sarcasm and much good humor, is the deduction that best describes the address of F. D. Van Amburgh, editor and publisher of *The Silent Partner*, the only speaker on the program. Advice on how to succeed, seldom, if ever, is given by the unique method employed by Mr. Van Amburgh, for his address "How to Fail" was a straight from the shoulder talk on the qualities necessary for success in any field.

Mr. Van Amburgh gave valuable counsel applicable to any man's needs. "How to Fail" is a serious message, a sort of sugar coated dose of deep significance taken with much laughter; a pleasant dose of practical advice all the more effective because the speaker gave it all in a most kindly manner and used himself as the horrible example.

Beginning with a few amusing stories, Mr. Van Amburgh gave an inventory of his own faults and frailties and then proceeded along more general lines to fit his experience to that of most men, for he claims that the shortcomings and virtues of humanity are pretty equally distributed and that certain characteristics are so general as to be found in all men, the thing needed being knowledge of self and a firm determination to correct our faults and work unceasingly for self betterment.

Mr. Van Amburgh is so much an actor and "How to Fail" so near an act rather than a lecture, address or talk, that to quote him literally seems hardly the thing to do, even if this were possible. Good stories, clever similies and maxims were skillfully employed to drive home his points, and that he scored was without question.

"How to Fail" proved illuminating, informative, entertaining and amusing, but, nevertheless, contained a serious message that will long be remembered.

During the course of the evening old songs and new were rendered by an excellent orchestra with verve and aplomb, the gathering joining vociferously in many of the choruses.

COST ASSOCIATION LUNCHEON

An unusually large and enthusiastic gathering attended the luncheon of the Cost Association of the Paper Industry on Wednesday afternoon at the Waldorf-Astoria. The presiding officer was Colonel B. A. Franklin, vice president of the Strathmore Paper Company, who made an excellent chairman and kept everyone in a good humor with his timely and witty remarks.

C. Oliver Wellington, C. P. A., gave an intelligent and comprehensive address on the problem "What Can We Do to Increase Net Profits?" He demonstrated the fact that profits can only be secured through a knowledge of exact costs and discussed various accountancy problems involved in the computation of such costs. Not only can a paper manufacturer not know the price at which his paper should be sold without a knowledge of costs, but adequate cost accounting methods will increase profits by pointing out sources of wastage in practical mill operation. Referring to the problem of over-production, Mr. Wellington pointed out that every ton of paper forced on the market simply deferred the time when the manufacturers could expect reasonable profits for their operations.

"What Price Management" was the theme of an instructive and exceptionally well delivered address by J. P. Jordan. He showed that the main point was the psychology of the situation and stressed the fact that all men, including superintendents and foreman, contributed to the production of their organization. He demonstrated the evolution of cost methods, and cited the various things that enter into efficient management.

Mr. Jordan described the proper setting up of an organization in a comprehensive manner, and stressed the importance of ex-

ecutives making certain that their cost methods fit their organization.

Mr. Jordan said that the secrets of success in industry today lay in planning out methods whereby every possible worker may be put on an incentive basis, so that every man would have the feeling that "this is his own business." He advised the executives not to limit bonuses and said that if everyone could quadruple his salary, all he could say was "God bless him."

WASTE MERCHANT'S BANQUET

The New York Association of Dealers in Paper Mill Supplies, Inc., held its twentieth annual banquet in the North Ballroom of the Hotel Astor on Wednesday evening, February 22, and it proved as entertaining as usual.

The efficient members of the banquet committee had arranged a most excellent menu and an interesting entertainment. The attendance totalled 200 and tables were reserved for the occasion by the following organizations:

Charles Arentzen, D. Benedetto, Inc., C. F. Bradley, R. Canovai & Sons, Inc., Vito G. Cantassano, Jas. Carrano & Son, Geo. Carrizzo Company, Darmstadt, Scott & Courtney, Delia Waste Products Corporation, Economy Baler Company, W. K. Emery, S. J. Fisher, Inc., Gaccione Bros. & Co., Gatti Paper Stock Corporation, R. F. Graham, Daniel M. Hicks, Inc., R. J. Hopper, E. J. Keller & Co., W. P. Kohler, Leshner Paper Stock Company, Chas. A. Mastronardi, Melrose Paper Stock Corporation, Geo. W. Miller & Co., Inc., A. J. Moran & Co., Inc., National Association Waste Material Dealers, Sterling Mill Supply Company, Walker Gorlard & Plehn.

The entertainment program consisted of the revue of the Suwannee Club assisted by the orchestra from the same club, together with a novelty quartet, the entire cast being billed as "A Night Down South."

The various Committee members are deserving of the highest praise for their efforts in providing the association members and guests with an excellent dinner and a most versatile evening.

The members of the Committee were Walter H. Martens, Chairman, Charles Passannante, and Alfred J. Moran.

THE PRESIDENT'S LUNCHEON

The luncheon tendered to former presidents of the American Paper and Pulp Association was held at noon Tuesday, with President D. C. Everest presiding. This luncheon usually proves especially interesting, inasmuch as it brings together the official heads of the various associations closely allied or affiliated with the parent organization. There were no formal addresses, but general discussions of such topics as are particularly pertinent to all phases of the industry were indulged in. Those present at the luncheon were as follows:

OFFICERS AND MEMBERS OF EXECUTIVE COMMITTEE: D. C. Everest, Marathon Paper Mills Company, Rothschild, Wis., president; S. L. Willson, American Writing Paper Company, Holyoke, Mass., vice president; Felix Pagenstecher, Bryant Paper Company, Kalamazoo, Mich., vice president; J. P. Hummel, Hummel-Ross Fibre Corp., Hopewell, Va.; Milton E. Marcuse, Bedford Pulp and Paper Company, Richmond, Va.; Norman W. Wilson, Hammermill Paper Company, Erie, Pa.; W. L. Carter, Nashua Gummed and Coated Paper Company, Nashua, N. H.

PAST PRESIDENTS OF THE ASSOCIATION: A. C. Hastings, West Harwich, Mass.; Walter J. Raybold, B. D. Rising Paper Company, Housatonic, Mass.; George W. Sisson, Jr., Racquette River Paper Company, Potsdam, N. Y.; Henry W. Stokes, York Haven Paper Company, 906 Land Title Building, Philadelphia, Pa.

PRESIDENTS OF AFFILIATED ASSOCIATIONS: Fred J. Rooney, The Upson Company, Lockport, N. Y., American Pulp and Paper Mill Superintendents Association; Arthur Havemeyer, Package Paper Co., Springfield, Mass., American Waxed Paper Association; Donald Lowe, Lowe Paper Co., Ridgefield, N. J., Cardboard Manufacturers Association; Ralph B. Knott, Eastern Mfg. Co., Bangor, Me., Cost Association of Paper Industry; Minor M. Beckett, Beckett Paper Co., Hamilton, Ohio, Cover Paper Manufacturers Association; J. S. Wiley, Berlin & Jones Co., 547 W. 27th street, New York City, Bureau of Envelope Manufacturers; R. N. Fowler, Hampden Glazed Paper Co., Holyoke, Mass., Glazed and Fancy Paper Manufacturers Association; Irving McHenry, Mid-States

BANQUET OF NEW YORK ASSOCIATION OF DEALERS IN PAPER MILL SUPPLIES, HOTEL ASTOR.

Gummed Paper Co., Chicago, Ill., National Association Gummed Tape Manufacturers; J. H. Coy, Flambeau Paper Co., Chicago, Ill., Salesmen's Association; E. C. Tucker, Chemical Paper Mfg. Co., Holyoke, Mass. Technical Association of the Pulp and Paper Industry; P. S. Fiske, Parker-Young Co., Boston, Mass., Wrapping Paper Manufacturers Service Bureau; E. H. Naylor, Writing Paper Manufacturers Association, Springfield, Mass.; A. J. Stewartson, Wrapping Paper Manufacturers Service Bureau, 53 Park Place, New York City.

PRESIDENTS OF ALLIED ASSOCIATIONS: J. C. Mallalieu, Geo. W. Millar & Co., 1284 Lafayette street, New York City; W. N. Gillett, Chicago Paper Company, 801 S. Wells street, Chicago, National Paper Trade Association; H. W. Mathewson, Paper Supply Company, Minneapolis, Minn., National Paper Trade Association; Henry Burn, Robert Graves Company, 929 3rd avenue, Brooklyn, Wall Paper Manufacturers Association; G. H. Rady, E. J. Keller Company, 200 5th avenue, New York, National Association Waste Material Dealers; W. N. Wilkinson, Supply & Equipment Association, 33 Rector street, New York; W. J. Alford, Continental Paper Company, Bogota, N. J., Paperboard Industries Association; J. M. Weaver, Keasbey & Mattison, Ambler, Pa., Asbestos Paper Manufacturers Association; Walter E. Trum, National Paper Box Manufacturers Association, 214 Sullivan street, New York.

Ernest T. Trigg, John Lucas & Co., Philadelphia, Pa.; Dr. Hugh P. Baker, Chamber of Commerce of the United States, Washington, D. C.; O. M. Porter, American Paper & Pulp Association, 18 E. 41st street, New York.

WAXED PAPER LUNCHEON

The American Waxed Paper Association held its first luncheon on Wednesday at noon time, with a full attendance of its members. The speakers were B. W. Scribner and H. R. Caldwell of the Bureau of Standards, Washington, D. C., and Ray Vance, president of the Associated Consulting Economists. Mr. Vance was the former president of the Brookmire Economic Service.

Both Mr. Scribner and Mr. Caldwell gave very interesting talks on defining the operations of the Bureau of Standards with relation to the Waxed Paper manufacturers' interests. Mr. Vance spoke on specific economic conditions as they apply to general business.

BINDERS' BOARD LUNCHEON

Those present at the luncheon of the Binders' Board Manufacturers Association, held on Wednesday afternoon at the Waldorf-Astoria, voted the event a thoroughly enjoyable and instructive function. While no business was transacted at this event, ideas were exchanged and various matters of interest discussed.

The following officers were elected for 1928-1929:

President—E. C. Betz, Consolidated Paper Company, Monroe, Mich.

Vice-President, E. H. Norton, C. H. Norton Paper Company, North Westchester, Conn.

Secretary, O. M. Porter, New York.

PAPER MAKERS' ADVERTISING CLUB

The luncheon of the Paper Makers' Advertising Club, held on Wednesday afternoon at the Waldorf-Astoria, was thoroughly enjoyed by those present. Matters of interest to the members were discussed and the importance of advertising to the paper industry was emphasized.

GUMMED TAPE MANUFACTURERS' LUNCHEON

The National Association of Gummed Tape Manufacturers held a most enjoyable luncheon at the Waldorf-Astoria Hotel on Thursday afternoon. Numerous matters of interest to the members were freely discussed.

GLAZED AND FANCY LUNCHEON

The Glazed and Fancy Paper Manufacturers Association held a luncheon at the Canadian Club, Hotel Belmont. An informal discussion of vital matters of particular interest to the members of the organization took place.

START MACHINE WORKS AT GLENN FALLS

H. D. Wells, associated with Trimbey Machine Works, and H. G. Rohde formerly associated with Farrel Foundry & Machine Company, have organized the American Paper Machinery and Engineering Works and are building a modern manufacturing plant at Glens Falls, N. Y., for the purpose of producing a line of superior machinery for paper mills.

H. D. Wells, mechanical engineer and sales engineer, is well known to the paper trade, having represented Trimbey Machine Works and Glens Falls Machine Works during the past fifteen years. He is one of the former owners of the Glens Falls Machine Works and has wide experience in the machinery field and also in the manufacture of paper; a combination unexcelled for building the best in paper mill machinery. He is thoroughly versed in the needs of paper mills and knows their requirements.

H. G. Rohde, mechanical and steam engineer, has wide experience in the machinery field and also in the manufacture of paper, having been associated with Farrel Foundry and Machine Company, Allis-Chalmers Company, National Aniline and Chemical Company, Arrowhead Paper Mills, and Nekoosa-Edwards Paper Company. He is a genius at constantly improving and building machinery to last.

Their line of machinery is: Continuous Filters, Pulp Screens, Pulp Thickeners, Pulp Washers, Save-Alls, Pulp Wood Grinders, Rotary Sulphur Burners, Pulp Presses, Wet Machines, Plug Valves for Stock, Centrifugal Stock Pumps, Rotary Pumps. This line of machinery is the result of improving the machinery of an old and reliable line of pulp and paper mill machinery.

TEXAS GULF BUYS SULPHUR DEPOSITS

Negotiations which the Texas Gulf Sulphur Company has been conducting with the Sun Oil Company for acquisition of the oil company's sulphur rights on property in Matogorda county, Texas, have been concluded, according to the *New York Sun*. Under the agreement reached the Texas Gulf Sulphur has obtained all of those rights and will proceed with the development of the properties.

The Sun Oil Company's sulphur properties adjoin those of the Texas Gulf Sulphur Company on the great Boling Sulphur dome in Texas. They are reported to be of extraordinary extent. The Sun Oil Company controls 350,000 acres of land in that area. It recently was stated that the sulphur deposits have a sulphur content of from 10 per cent to 65 per cent, with a general average of 30 per cent. The possible maximum recovery was estimated at 80,000,000 tons.

Just what the terms of the agreement with the Sun Oil Company are was not learned today. It is known that the Sun officials were asking for a cash payment of upward of $1,000,000 and a royalty on the entire sulphur output.

WORK OF SUPERINTENDENTS ASSOCIATION

Some of the splendid things accomplished by the American Pulp and Paper Mill Superintendents Association were reviewed the evening of February 16, by Fred Rooney, national president, who was the chief speaker at a joint session of the Michigan Division of Superintendents and the Kalamazoo Valley Division of the Cost and Technical Association of the Paper Industry held at Kalamazoo, Mich. This gathering was held at the Park-American and brought out a generous attendance.

President Rooney said his organization plans to do greater things in the future than have been accomplished in the past. He expressed his favor of joint gatherings of those interested in various phases of the paper industry.

Ivar Lundbeck, of the Lee Paper Company, Vicksburg, gave a fine paper on "Sources of Dirt in Pulp and Paper." He outlined certain methods to eliminate that evil. Hugh Smith sang a group of Scotch songs.

MANUFACTURERS OF PAPER MEET

American Paper and Pulp Association Holds Fifty-first Annual Convention at the Waldorf-Astoria Hotel, New York City

D. C. Everest of the Marathon Paper Mills Co. Is Reelected President of the Organization For the Ensuing Year—Major O. M. Porter Who Has Been Acting Secretary Is Elected Secretary—Special Committee of Five To Investigate Matter of Reorganization of the Association and To Report Either at a Special Meeting in the Fall or at the Next Annual Meeting—Other Associations Elect Officers.

THE fifty-first annual meeting of the American Paper and Pulp Association held in the Astor Gallery of the Waldorf-Astoria on Tuesday attracted a record attendance and proved that the change from Thursday to Tuesday was advisable. President D. C. Everest called the session to order at 10.50 a.m. The minutes of the preceding annual meeting were approved without reading. A special report of former executive secretary Dr. Hugh P. Baker, covering the period from 1920 to 1928, printed and bound, was distributed to all those present and was accepted without reading. Oliver M. Porter presented the treasurer's report, and the budget for the forthcoming year as recommended by the executive committee was unanimously approved.

In an important address, President D. C. Everest declared that constructive plans for the development of the association in the future, suggested by authorities of high standing and importance in the paper industry, have suggested to the executive committee the necessity for a change in the form of organization.

The arguments in favor of some changes were so strong and seemed to have so much merit that it was decided to submit this subject to the meeting and to ask the approval of the membership of the appointment of a committee which would, during the year of 1928, investigate the subject and submit a plan of organization to the membership either at a special meeting to be called in the fall or at the next annual meeting.

It is contemplated that ample time shall be taken for the investigation so that every branch of the industry will be given an opportunity to submit their suggestions and to avoid rushing into some new plan of organization which will not prove workable or an improvement on the present form.

The idea suggested is that of an American Paper Institute, fashioned along the lines of several other organizations now in use by other prominent industries in the United States. Whether this shall be an organization which deals with only the general problems of the industry and shall seek to extend the work through organization of unorganized groups, thus bringing together a stronger general organization or whether it shall become a unified organization with a general manager and with the several associations and committees as departments of the parent association depends on the final approval of the association as a whole.

On the proposal of Norman W. Wilson, the president was unanimously authorized to appoint a special committee of five members to investigate the subject and to submit a plan of organization to the membership either at a special meeting to be called in the autumn or at the next annual meeting.

The rest of the morning session was taken up by O. H. Cheney, vice-president of the American Exchange Irving Trust Company, who gave a remarkably well informed address on "Meeting the New Competition," and Ernst Mahler, vice president of the Kimberly-Clark Company, who analyzed the functions of the operating superintendents and the technical superintendents. He declared that it should be the aim of the up to date paper manufacturer to produce products better and more economically and to cultivate wider markets for paper and paper products.

D. C. EVEREST, PRESIDENT

Promptly at 2.30 p.m., the afternoon session got under way in the Myrtle Room of the Waldorf-Astoria. C. M. Baker, engineer of the American Paper and Pulp Association presented a report on Waste Utilization and Stream Improvement which was greatly appreciated and demonstrated the importance of the work his department has undertaken. Milton E. Marcuse afterwards introduced a number of resolutions in his capacity of chairman of the Resolutions Committee, all of which resolutions were promptly adopted.

Fred J. Rooney, president of the American Pulp and Paper Mill Superintendents Association, described the program of his organization and the benefits derived thereby. His remarks regarding co-operation between the management and the superintendents were to the point and were appreciated by the gathering.

Discussing "Lawful Combinations in Industry," Henry A. Wise, counsel for the Association, said that trade associations are no longer in disrepute because of efforts to restrain competition, but that most of the existing organizations in all industries have as their chief objective the securing of pertinent facts regarding their industry, so that competition may be free and unrestricted, but with a full knowledge of sources of supply, technical developments and other absolutely legitimate basic information. Trade associations of today, he said, were not price fixing organizations, but as in the paper industry, most industries eliminate from their trade association activities any matters involving prices, distribution of territory or any questionable practice. "Justice," he said, "is portrayed as blindfolded. There is no reason why an industry should be similarly handicapped. Without knowledge failure is certain."

Walter J. Raybold, chairman of the nominating committee, reported that his committee had unanimously decided to nominate the present officers for the following year and the secretary was instructed to cast a ballot for their re-election. The officers for the forthcoming term are, therefore:

President, D. C. Everest, Marathon Paper Mills Company; Vice President, S. L. Willson, American Writing Paper Company; Vice President, Felix Pagenstecher, Bryant Paper Company.

Executive Committee: Hugh J. Chisholm, Oxford Paper Company; Norman W. Wilson, Hammermill Paper Company; Milton E. Marcuse, Bedford Pulp and Paper Company; W. L. Carter, Nashua Gummed and Coated Paper Company; J. P. Hummell, Hummell-Rose Fibre Corporation.

Secretary, Oliver M. Porter.

THE PRESIDENT'S ADDRESS

D. C. Everest, the president of the association delivered his annual address as follows:—

It is, indeed, a pleasure to see so many of the faithful supporters of association activity present this morning at the opening of this, our fifty-first annual meeting. You will recall, that at our last annual meeting it was proposed that we change the regular day of holding the meeting of the American Paper and Pulp Association from Thursday to an earlier day during the week and that we make it a full day session instead of trying to crowd it into one half day as heretofore. The decision as to the day was left to the executive committee which decided on Tuesday as being the best day for such meeting and through co-operation with the affiliated associations have arranged that the holding of most of the meetings of the various groups, ordinarily held on Tuesday, be postponed to a later date or that only short meetings be held so as to give their members opportunity to attend the meetings of the American Paper and Pulp Association. The continuance of the meetings of the parent association on Tuesday will depend upon the success of this meeting.

It seems logical that the meeting of the parent association which has in charge the arrangements for this annual program should be held on Tuesday, thus giving opportunity to lay before the members either as a whole, or as affiliated associations such matters as the executive committee feels should be submitted. I sincerely hope that it will be found that this plan is feasible and that we may have a full attendance at the business meeting. It is the intention to present at these meetings only such matters as are of vital importance to the membership and to augment our regular business program with speakers of national reputation who will discuss problems which should be of interest to every person engaged in the industry.

The Work of the Past Year

During the past year the work of the association has followed practically along the same line as during the previous administration. In his address last year President Norman Wilson recommended several things which he thought should be done for the good of the Association. Some of these suggestions have been carried out. Others have been delayed owing to developments which came about due to suggestions made to the executive committee during the current year.

Mr. Wilson, as a member of the executive committee, is familiar with what has transpired and I am sure, feels that the present administration has not been negligent in failing to carry out or put in force all of his recommendations. Dr. Baker, in his secretary's report, which has been printed and will be distributed at this meeting, has very well covered the work of the current year and of the activities of the association during his term as secretary extending over a period of eight years. Dr. Baker served this association well during the eight years he was with us and it was with deep regret that the executive committee accepted his resignation in order to permit him to accept the management of a new department of the Chamber of Commerce of the United States, known as the Trade Association Department. Into this new work I am sure that Dr. Baker will put the same thought and energy which he has displayed in his connection with this association and his success in his new field is assured.

Major O. M. Porter, who has been associated with Dr. Baker for so many years in the work of this association and who has, at all times rendered valuable service was appointed by the executive committee as Acting Secretary. He has carried on the work in an excellent way.

Three outstanding features of the Association service have been developed and are now contributing to the welfare of the industry. First, The Statistical service which was developed by Paul S. Hanway and which is constantly proving of increased benefit to those who use this service.

Second, the work of the National Stream Purification Committee of the Pulp and Paper Industry which resulted in the engaging of Clarence M. Baker, who was formerly State Sanitary Engineer of Wisconsin as engineer for the committee and who has already rendered valuable service in connection with this work and who will speak during the afternoon session on the results accomplished and the plans for the future.

Third, the excellent work of Dr. Baker in his survey of the pulp and paper industry in the West Coast states. There had been so much talk of development along the West Coast that the executive committee decided that we should have some definite information as to the extent of this development and accordingly Dr. Baker was sent to the Coast to make a survey, the result of which has been published, through the courtesy of some of our members, and circulated among the membership. There was also prepared by the Tariff Committee the complete tariff history of duties on pulp and paper from the beginning of this government down to date. This is the most comprehensive and understandable statement of tariff history applying to this industry which has been published.

I wish to thank the officers and members of the executive committee and others who have met and counseled with us during the past year, for their loyal support and helpfulness in carrying on our work and also to acknowledge, with deep appreciation, the excellent work of the secretaries and the staff of the association who have conducted the affairs of the organization so efficiently. I also desire to express my appreciation of the hearty co-operation and support of the trade press during the past year. It has been extremely helpful in getting before the members and non-members, full publicity relative to our work.

Developments for the Future

During the past year several gentlemen of high standing and importance in the industry have suggested to the executive committee the necessity for a change in the form of organization in this Association. As it developed, this seemed to be the most important suggestion which has come to the attention of the executive committee. The arguments in favor of some changes were so strong

and seemed to have so much merit that it was decided to submit this subject to this meeting and ask the approval of the membership of the appointment of a committee which would, during the year of 1928, investigate the subject and submit a plan of organization to the membership either at a special meeting to be called in the fall or at our next annual meeting. It is contemplated that ample time shall be taken for the investigation so that every branch of the industry is given an opportunity to submit their suggestions and to avoid rushing into some new plan of organization which will not prove workable or an improvement on the present form. There has been some criticism advanced that we have changed our form of organization too frequently in the past and that we should have adopted some plan and stuck to it, but with the changes in the industrial situation in this country in the last fourteen years and the constantly changing conditions with which we are now confronted, it seems only reasonable that forms of trade associations and their activities might well change with the changing industrial situation. We are today in the throes of what has been termed the "New Competition," about which, we will learn more from one of our distinguished speakers. If we have new competition, and there seems to be no doubt that we have had, since the war, a new something, which is rather disturbing to industry, then we ought to meet it with a plan of organization suited to present day needs.

As we are organized today we have the central organization known as the American Paper and Pulp Association with affiliated organizations of three kinds, as follows:

1. Affiliated association of manufacturers of different kinds of paper, such as writing, wrapping, et cetera.
2. Affiliated association of groups of specialist employees, such as technical men, superintendents, salesmen, and cost accountants.
3. Operating committees, which in turn are subdivided into two groups:
   a. Self sustaining groups, operating outside the American Paper and Pulp Association, but in harmony with it, such as the Import Committee and the Committee for the Perpetuation of the American Paper Industry.
   b. More or less self supporting groups such as the National Waste Utilization and Stream Improvement Committee, operating out of the Association office.

The present situation undoubtedly, as operated, results in some duplication of work, as for instance, the collection of statistics by the central organization and also for groups by the group associations. This results in internal questions, involving the line of demarcation between the group and the general organizations.

Also, there is a possibility of similar difficulty as between other groups; for instance the Import Committee's work involves a study of foreign conditions, while the Association has a Tariff Committee to direct legislation, and also needs the same information for export trade developments as that required by the Import Committee as a basis for its effort to enforce the law.

The present situation is the result of a long development of the various groups along their own particular lines, which at times seem to involve intrusion of one group's activities into the field of other groups. New activities have developed, and it has been necessary to finance them separately.

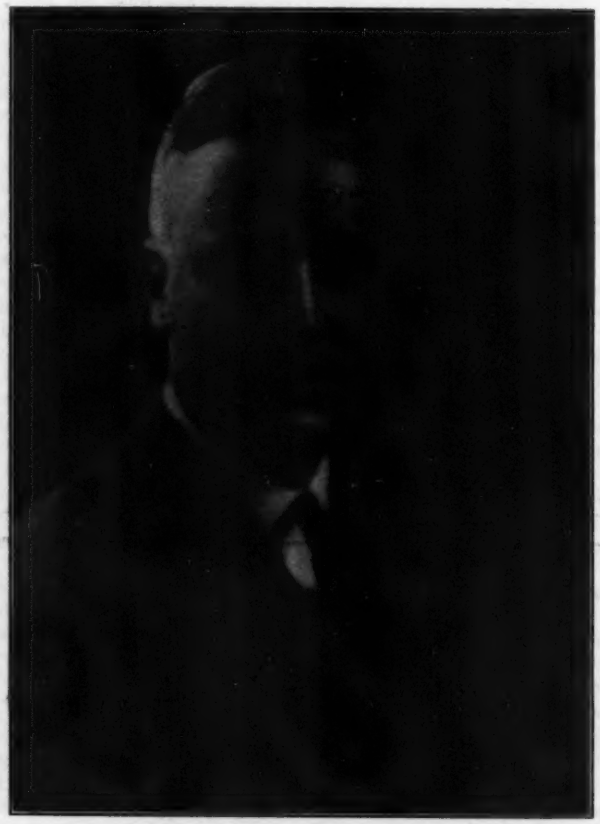
The result is that while highly organized, there is undoubtedly an overlapping of various groups, and that the organization has become so detailed as to fail of its purpose at times, that is, the alignment of the entire industry for the achievement of generally desired results.

Three solutions are open:

1. Continuance of the present situation.
2. Amalgamation of operating committees in the organization.
3. Formation of a new super-organization, to combine all existing activities in such a manner as to eliminate overlapping and still to allow different groups to maintain their present independence in group problems.

The first solution is most simple, but the organization is anomalous and will always have the elements of unnecessarily duplicated overhead. In theory it is not correct even though it has been possible for all groups under the existing arrangement to accomplish some excellent results. I believe, however, that with adequate financial support and with more definite allocation of work and cooperative effort between this and the affiliated organizations, in the elimination of duplication of activities the situation can be materially improved and strengthened.

The second solution has its chief difficulty in the unwillingness of well organized groups to be placed on an equal basis with other groups perhaps not so well organized. Also we have the difficulty of taking over the operating committees which are financed by members and non-members.



O. M. PORTER, SECRETARY

The third solution seems to offer opportunity for avoiding group jealousies and rivalries, and at the same time to offer the centralized supervision by the entire industry of the whole fabric of association activities which would seem to be theoretically advisable. Perhaps the thing we need is a dictator to direct all the activities of manufacture, conversion and distribution but up to date no one has been able to suggest a man who possesses the necessary God-like intelligence to carry on successfully such an ideal work.

The idea suggested is that of an American Paper Institute fashioned along the lines of several other organizations now in use by other prominent industries in the United States. Whether this shall be an organization which deals with only the general problems of the industry and shall seek to extend the work through organization of unorganized groups, thus bringing together a stronger general organization or whether it shall become a unified organization with a general manager and with the

several associations and committees as departments of the parent association depends of course on the members and their expression to the proposed committee and the final approval of the association as a whole.

We have today a gigantic industry, ranking seventh in the United States in value of product. We have annual sales of paper and paper products slightly in excess of one billion dollars. We have an estimated productive capacity of twelve and one-half million tons annually. In 1927 we produced slightly under ten million tons or eighty per cent of possible production. During the year we consumed something over eleven and three quarter million tons, indicating an importation of approximately two million tons most of which was news print originating in Canada.

With this situation, in as high a consumptive year as we have ever had, it is not difficult to figure that we have a large potential productive capacity at home and in Canada, which cannot be utilized to advantage. If we had manufactured the entire amount used in this country last year, we would have still had seven to eight per cent of capacity available and not operating. The major portion of news print consumed in this country comes from Canada and this is a situation which will constantly continue. Canada has installed capacity beyond its domestic and foreign demand and undoubtedly will have this excess capacity for several years to come. With this potential productive capacity both at home and in Canada hanging over us, it should be evident to all that we have a condition to face which calls for the most intelligent handling of the business of the industry. We are over-produced by at least twenty-five per cent in totals with varying percentages between the several groups or grades. The pulp and paper industry is in no different situation than probably ninety per cent of the industries in the United States. Does not such a situation demand that we have an organization embracing every branch of the industry, organized in such a way as to be able to give promptly, accurate information as to production, importations, consumption, and all of the other vital statistics which are so necessary to the proper handling of our business?

There is a wide variation of product in the paper industry but nearly all of these are, in a way, inter-related. We have need for a strong organization to handle the general problems of the industry. We need the cooperation and support of every pulp and paper manufacturer in the United States. There has been altogether too much of the idea that forty per cent of the concerns engaged in this business should carry the load for the balance, and while the forty per cent of concerns affiliated with the Association probably represent seventy-five per cent of the tonnage produced, yet the time is not far distant when all manufacturers must realize that, in this highly competitive over-produced industry, if things continue on an unrestrained and unintelligent productive basis, it will result in such an undesirable condition as is usually expressed by the sinister phrase "a survival of the fittest."

We have built up through the cooperation of superintendents, engineers, technical staffs and machine builders, a highly efficient manufacturing department, capable of producing more products than ever before at lower costs. The machinery to accomplish such results is constantly in motion. In a business dependent on chemical and mechanical processes, we are apt to have new discoveries brought about through research, which will upset our whole present day system and add to the difficulties of an already complex situation. Are we to build up a gigantic machine, which, through our failure to regulate properly, its production or to develop uses and markets for its products, will destroy our business rather than make it more profitable?

Would it not be better to lend support to an organized effort which will give the facts and enable those who produce to do so with the information as to the possible absorption of their products and not overload the market with goods which creates a condition which in the long run is not of benefit to the public, nor to the concern which produced them?

I appeal to the thinking men in this industry to help us to work out a plan which will tend to prevent the destructive factors of present day business from destroying this industry.

As the changing conditions due to the great war have forced our country into more consideration of internationally political and economic problems, so the changing conditions in productive capacities, the developments of new materials and consequent new locations, the constantly new competitive situations which have arisen, have forced this industry into the consideration of its problems on a national and even an international basis.

There is no longer any need for sectional groups or associations, except for purely local problems. The South in its production of wrapping and bag papers and the West Coast in its diversified development is as important a factor in competition with a New York manufacturer today as are the mills located in Maine or Wisconsin and the competitive action of Central States mills or Eastern mills is equally as important to the South or West Coast. None is exempt. The action of the one affects the other. Some may think they occupy a peculiar position, safe and secure from the inroads to be made by others, but such is not the case. The trend in the industry has been toward further expansion which only tends to make the situation more acute. What we need is a breathing spell in building and expansion programs. This statement does not apply to any particular concern or section of the country. Concerns in which I am interested as well as those in which you are interested have been carried away in the mad scramble to produce more and reduce overhead. This program to "reduce" has far outrun the efforts of the plumper members of the so-called weaker sex and with far more disastrous results. We need an agency which can collect and disseminate information relative to every branch of the industry and which can have the cooperation of every manufacturer in these various branches. It seems to me that it is high time we were in position to give investors and bankers who make further developments in this industry possible, accurate information as to the possibilities within the industry.

Too many persons promoting new projects make accurate surveys of the source of raw materials, water supply, power, labor, location, and all the other factors of manufacturing and leave out of the picture the one important factor of whether or not the market will absorb the production.

We have affiliated with this association several well organized groups and the better the organization, the better the condition existing in their business. It may be that the suggested super-organization may be of more benefit to the poorly organized or at present unorganized groups than to those which are well organized and which have borne the burden of work and expense over the many years of association work, but, with the present tendency to shift grades within mills and to put through old mills onto other grades, the availability of accurate information through a comprehensive association become equally as important to the well organized groups as to the concerns which contemplate such changes. We need a unified association with closer contact between the several groups. There was used in this country last year approximately only forty thousand tons of bleached sulphite for the manufacture of rayon and yet we hear of at least two projects for the manufacture of cellulose for this purpose, one from an annual plant growth and one from spruce wood, each with an estimated capacity of one hundred tons a day or a total of sixty thousand tons annually or one hundred and fifty per cent of the total consumption of last year. Where do these people expect to find their market? Do they expect those now engaged in that business to sit idly by and see their tonnage taken away? Here is a comparatively new development in the use of cellulose and one which, if properly developed, might mean a profit for some one in the industry, and yet if these proposed projects are carried through to a successful conclusion the competition is bound to eliminate the profit which should follow the development of a new use of this sort. We have had and will have many instances of this kind. It may affect your business today or it may affect my business tomorrow. Is there not some way by which some of this can be eliminated? Free and unrestricted competition may have been the life of trade under certain conditions, if such

conditions ever did exist, but today it is ruining more than one industry. Practically every industry is faced with the same condition. Are we, who make the carrying on of business possible, the one essential industry which furnishes the material on which all business transactions are recorded; on which the products are advertised; in which they are wrapped, protected and delivered and without which products of our present day business could not exist, are we to be dragged into the same unrestricted and ruinous competitive situation as the other essential and non-essential industries? Something must be done to stabilize conditions, either through intelligent action on the part of those engaged in the industry, or through governmental regulation or supervision, or a combination of the two. I am not an advocate of government in business but unless industry finds a way to correct the abuses within itself, legally and intelligently, I see no other way out. Conditions could become so extreme as to force governmental regulation through public demand.

What I would like to see done is to have this suggestion of the appointment of a committee approved at this meeting and to have the help and hearty support of every member during the coming year in assisting the committee in the preparation of a plan for the future operation of the Association. Whether this should involve an enlargement or extension of the present federated plan to include all general service activities or should involve the adoption of the so-called institute plan, is a matter for the membership and the committee to decide, but I feel that something should be done to put us in stronger position against the time when industrial problems become even more trying and more complex than they are today.

We have much of the fundamental work begun, and we need coordination. I do not believe there is any industry which has as unique an organization as our Import Committee and but comparatively few realize the wonderful work they have done. No industry with which I am familiar has such an excellent organization as the Technical Association for the discussion of its technical problems. Their present effort to excite interest in students in the various colleges and universities to train for the pulp and paper industry, will I believe, prove of great benefit and will help to improve the personnel of our organizations. This afternoon we will hear from one of the most prominent technical men in the industry on the subject of "Technical Control."

Probably no other industry has an organization comparable with our Superintendents' Association, wherein such benefits for the men and for the companies which they represent, have been derived. We will hear from the president of this association today relative to their program. The Salesmen's Association stands alone in its field and has, through its promotion of friendship and good will and its many other services to the industry, made itself an indispensable part of our association work. The Cost Association has contributed greatly to the success of our business, and I hope the time may come when every concern may, through the operation of an uniform cost accounting system, have accurate information as to grade costs and so far as practicable can compare their relative profits on a machine hour basis. Twenty-four hours of machine operation per day is all we have to sell and such a basis of determining profits is well worth investigation.

The Woodlands Section is doing and will continue to do an increasingly important line of work. The future of a large part of the raw materials for this industry depends on the forestry policy of this country. Research in forest practice and management and in wood utilization is the salvation of this industry and will insure its perpetuation in this country. The recent employment of an engineer in the matter of stream purification and the work being done by private and governmental agencies in the utilization of sulphite waste liquors bids fair to turn what first looked like an item of expense in its disposition, into one of profit to the industry.

These and many other activities are being carried on, all of which promise beneficial results to those who participate in the work.

You will recall that last year President Wilson called attention to the financing of this organization and it was proposed to use the gross sales as the basis of contribution. Several letters were sent out and about one hundred and sixty of the members reported their gross sales for 1926. There were but few objections on the part of members to giving sales information. The plan was commended by many as being the only fair and equitable basis of assessment. With the data obtained Secretaries Baker and Porter worked out a suggested plan which the executive committee discussed at several meetings and it was decided to present this plan to this meeting, but shortly after, the matter of change of form of the Association was brought up and it was decided that the change in plan of financing should be included with the plan for the new association rather than to change the scheme of financing now, and then be compelled to set up on some other basis later. Accordingly it is the plan to go through this year on the same basis as heretofore and I sincerely hope that you will all extend the same financial support as in the past. While the investigation of some new plan of association is going on there will be no let up in the work as presently organized, in fact, we believe the association is in better position to render service than ever before and that the value of your connection with the association will constantly increase. I hope that the time will come when we do not have to secure the renewal of annual pledges, but that membership will be continuous and bills be rendered for dues without the necessity of securing new pledges each year. I ask that for 1928 you give us your pledges promptly for at least the amount you have pledged previously.

One thing which I hope may be brought about in the future is closer cooperation with the National Paper Trade Association and with the several organized converting groups. These organizations largely control our distribution problems. They are our salesmen.

The National Paper Trade Association has under way a campaign of national advertising of paper. This is the outgrowth of several years of hard work on the part of their marketing committee. This plan should have our cooperation. Advertising is made possible through the use of our products, and the increased use of our products should be made possible, through advertising.

Costs in this industry may reach the irreducible minimum and the spread between present costs and that ideal condition amounts to but a comparatively small amount. Our hope and the hope of our distributors lie in the development of new uses and increased use for the purposes now known to the industry. The problems of the producers and the distributors are much alike and they, too, are faced with an "over production" in potential sales capacity, which is bound to react on the producer through the competition which exists in the resale of his products.

There is only one boat in this industry and every one who has anything to do with pulp or paper is in it.

Outlook for 1928

I do not want to leave the impression that the immediate outlook in the paper business is not good. I believe that 1928 will show a greater consumption of pulp and paper products than in any previous year. This may not be true of every branch of the industry but total consumption of all grades will show an increase. Whether we make this a profitable year depends on the common sense which we and our distributors display in the production and sale of our products.

In conclusion, permit me again to urge your general financial support of our present form of association during the coming year. I feel confident that out of the discussion which should follow the suggestion of some change in form of association, there will come many constructive ideas which will be adopted

and made a part of our present activities. Even if we do not eventually change our association structure, I am sure that with adequate financial support we can render better service to our members than ever before. That we can, through cooperation with our affiliated associations eliminate some of the duplication of effort and definitely allocate certain classes of work which can be better performed by one than the other. It should be the aim of this association and its affiliated associations to work these things out on a common sense basis so as to save expense and yet render equally as valuable or better service than heretofore.

In other words, I hope we will not see a falling off in interest or support of the present association, simply on account of the suggestion of a new form, but let us carry on in the same manner as heretofore and allow the proposed committee to work out a plan to be presented later. I am confident that with your continued active support the association will render a better service than ever before, through the natural development of plans and classes of work which have been under way for some time and the adoption of new suggestions which may come to us.

I trust that when the resolution is presented providing for the appointment of the committee you will take favorable action and let us see what can be suggested to improve our position in the present industrial situation.

THE SECRETARY'S REPORT

Dr. Hugh P. Baker, who on February 1 resigned as executive secretary of the association to become manager of the Trade Association Department of the Chamber of Commerce of the United States, reviewed in an interesting manner the history of the association and continued the secretary's report in part as follows:—

There has never been a time in the years of development of American industry when there has been greater necessity than there is today for industry to make itself vocal in the economic and political life of the nation and it is particularly important that as the industry speaks for itself it shall speak with the force of a single voice. There is no way by which an industry, such as the paper and pulp industry, can present a united front in all of the complex problems which are pressing it from the outside, or by which it can speak as a unit, than through the trade association. The very fact that this Association has had continuous existence for 51 years indicates the belief of a large part of the industry that it must have a means of expressing itself in all matters affecting the industry through a reasonable tariff, the policing of the tariff law, the perpetuation of its supply of raw materials, or in such matters as taxation, freight rates, stream improvement, etc.

While the Association does not yet speak for every group within the industry and while it may mean years of aggressive educational effort before all of the various groups in the industry unite as a single force behind the Association, yet there can be no question but that the increasing complexity of economic problems with which the industry is faced and the increasing competition in the domestic and foreign markets, will force the industry to come together and stand solidly back of the one agency which is representing the industry today, that is, the American Paper and Pulp Association.

Consistently, during the past eight years, the officers and staff of the Association have hammered at the fact that the Association is the only agency within the industry which could speak for the industry in any of the increasingly important outside contacts with other industries, with government, and with the public. This has resulted in giving the Association prestige, as the mouthpiece of the industry, that it has never enjoyed before. This ground must be held and further advances made and there is every indication that under the wise direction of the leaders of the industry great advance will be made in the next few years. Never again will the industry go through the humiliating experience which it went through several years ago in Washington when the chairman of an important congressional committee told a group representing different elements of the industry to go out in the hall and settle their own differences and then come back and tell the committee what the industry needed as an industry.

Statistical Service

During the past year the statistical service of the Association, under the direction of Paul S, Hanway, has been functioning as a thoroughly effective service bureau. Statistics on pulp and paper, outside of the current statistical activities of the Writing, Cover and Tissue Associations, the Wrapping Paper Manufacturers Service Bureau, and the News Print Service Bureau, were found to be in a rather chaotic condition. It has been the work of the Statistical Department during the past year to bring order out of chaos through developing sound sources of information and by properly segregating and organizing the statistics covering various grades of pulp and paper. During the year two series of graphic charts covering pulpwood, pulp and paper, have been produced and sent to the members of the Association. These graphic charts are a background for future statistical work in the industry.

The statistical service has received splendid help in co-ordinating and bringing together basic statistics from the U. S. Forest Service and the Bureau of the Census at Washington. It has had the fullest cooperation from affiliated associations and from the Paper Board Industries Association and the Southern Kraft Manufacturers Association, organizations not affiliated with this Association.

Another outstanding accomplishment of the statistical service during the past year has been the much needed revision of the census schedules covering pulpwood, pulp and paper. It has been appreciated for some time that the census schedules were not in the form to give information of the greatest value to the industry. While the Association has had this matter up with the Bureau of the Census in years past, it has never been able until the past year to accomplish results desired and that largely because it did not have a trained statistician to make a thorough study of the whole census situation as affecting paper. Without such study it was impossible to bring the industry into reasonable agreement as to the changes desired.

Early in the year the Association brought into existence a Committee on Statistics and it was particularly fortunate in securing the help of C. B. Brown of the S. D. Warren Company as chairman of this committee. Two regular meetings of the committee were held and these were largely attended by representatives from affiliated associations, from the Paper Board Industries Association and the Southern Kraft Manufacturers Association, and by representatives of the Bureau of the Census. It is very fitting that the Association should record the most sympathetic cooperation from Director Steuart and his associates in the Bureau of the Census.

Following meetings of the committee Mr. Hanway did special work with association representatives in Springfield, Boston, Chicago and Washington, and finally almost unanimous agreement in the proposed changes was secured from organizations within the industry. These were accepted by the Bureau of the Census and the Biennial Census of 1927 will be based upon these revised schedules. In view of the fine way in which the Bureau of the Census has accepted almost complete revision of the census schedules for the pulp and paper industry we feel strongly that it would be decidedly to the advantage of the industry for individual mills to cooperate fully with the Bureau of the Census in the careful filling out of the schedules and their prompt return to the Bureau.

Accurate and complete statistical reports are the most valuable guide posts to the manufacturer of today in determining trends of business and in satisfying himself as to the relation of his operations to the industry as a whole. Even with the progress that has been made there is much to be accomplished. Great improvement

could be made in statistics covering pulpwood and pulp and it is hoped that the Association will not lessen in any way the effectiveness of its statistical service but that it will make the necessary effort during the coming year to develop more complete and accurate statistics on pulpwood, pulp and secondary raw materials used in the industry.

A phase of the work of the statistical service which has met with fine response is the issuance of the Weekly Business Review.

An Engineer in the Industry

One of the first contacts which the Secretary had with Washington after coming into the Association in 1920 was in connection with a drastic stream pollution bill introduced in the House by Representative Appleby of New Jersey. In cooperation with representatives of other industries which discharge waste into rivers and streams this bill was opposed and its passage prevented and that because if passed it would have been confiscatory in character. This led to an investigation of the stream pollution situation in the industry. Inquiries were sent to a number of national scientific organizations and governmental departments and with the apparent importance of the subject it was surprising to find out how little was known as to the effect of the discharge of various forms of wastes into streams and rivers.

Gradually during the past 8 years, stream improvement laws have been passed in various states and in a number of instances the Association has been able to assist in modifying these laws and in bringing about a better understanding of their application. The growing menace of confiscatory stream pollution legislation in the states and in Congress emphasized the necessity of the industry attacking the problem for itself and in so far as possible solving it in such a way as to not only meet with the requirements of legislation but that waste might be saved to the financial benefit of the mills.

The Technical Association of the Pulp and Paper Industry, which has been very aggressive during the past few years in meeting technical problems with which the industry is confronted, several years ago appointed a Committee on Waste Disposal. Two years ago, after this committee had made a report to the Technical Association, a discussion of the report brought out the fact that the problem is industry-wide and is of so much importance that it should be met by an organization more representative of the entire industry than even the Technical Association. Therefore, a resolution was passed by the Technical Association calling upon the American Paper and Pulp Association to act for the entire industry. On the basis of this resolution by the Technical Association, a resolution was passed at the 49th Annual Meeting of the American Paper and Pulp Association which authorized the president to appoint a committee to make an investigation of the situation and prepare recommendation. In the spring of 1926, Mr. Norman W. Wilson, then president, appointed the National Stream Purification Committee of the Pulp and Paper Industry. This Committee met in Chicago in July, 1926, with very full attendance, including representatives from Engineering Departments of several of the states most concerned. The Committee finally recommended that the only way in which the problem could be met effectively would be for the American Paper and Pulp Association to employ a trained engineer. As the Association did not have funds available for an engineer, a sub-committee on Finance was appointed and this sub-committee, under the leadership of Mr. H. E. Fletcher of the Fletcher Paper Co., Mr. Ernst Mahler of the Kimberly-Clark Co., Mr. H. P. Carruth of the Mead Pulp and Paper Co., and with the assistance of sub-chairmen in various states, finally, in 1927, raised a fund of $10,000.

It was not an easy matter to find a man to carry this work on a satisfactory basis but finally in the fall of 1927 Clarence M. Baker, State Sanitary Engineer of Wisconsin, was secured and he began his work November 1st. Following Mr. Baker's appointment a second meeting of the general committee was held in Chicago in November, 1927, where plans for the first year's work were discussed and at this meeting it was felt desirable to change the name of the Committee to the National Waste Utilization and Stream Improvement Committee of the Paper and Pulp Industry. Mr. Baker went immediately into the field and by the time of the 51st Annual Meeting he will have visited practically all of the states east of Minnesota and north of Georgia in which the question of stream pollution is in any way an important one. Mr. Baker will make a brief report on his work to date at the Annual Meeting.

Woodlands Section

One of the first special activities developed within the Association after March 1, 1920, was a Woodlands Section and when, three months later, O. M. Porter was brought into the Association as Assistant Secretary, it was with the understanding that he would develop the Woodlands Section. He handled the Section in a very effective way until the growing work of the Association and the Woodlands Section made it necessary to employ a forester to give his full time to the work of the Section.

So much interest was shown in the work of the Woodlands Section by the mills using pulpwood that special funds were then raised and on August 13, 1925, D. A. Crocker, formerly Vice-President in charge of Woodlands of the Eastern Manufacturing Company, was brought in as Secretary of this Section. Almost immediately Mr. Crocker went into the Lake States, spending a number of weeks in a careful study of the pulpwood situation there. Upon this field study was based a report, which was printed and given wide distribution. The report met with fine response not only from the industry but from foresters outside, who are particularly interested in the pulpwood situation.

Following the completion of the report on the pulpwood situation in the Lake States, Mr. Crocker went into Virginia, West Virginia and North Carolina, to make a field study of the pulpwood situation there. Due to rather unusual conditions the report on the pulpwood situation in the Southern Atlantic States is not yet completed but it is expected that it will be ready for publication early in the year.

The field studies both in the Lake States and in the Southern Atlantic States were made possible by special contributions from pulp and paper manufacturers in those sections to cover the traveling expenses of Mr. Crocker and publication of his report. Very helpful financial assistance was received for this work also from the American Pulp and Paper Mill Superintendents' Association and from the Supply and Equipment Association.

Owing to limited funds and the growing importance of the statistical service and other activities in the Association it was felt wise to discontinue the services of a special secretary for the Woodlands Section and Mr. Crocker severed his connection with the Section on November 1, 1927. He continues as Secretary of the Salesmen's Association of the Pulp and Paper Industry.

Paper Industry on the West Coast

The wide-spread interest evidenced today within the industry itself and by bankers and business men outside the industry in the further development of mills on the West Coast would appear to mean at least to the outsider that West Coast developments are entirely new and that it is a fertile field for a wide expansion of the industry. The industry knows well that there have been a number of fine, up-to-date mills operating on the West Coast for a number of years and has considered these western mills to be a very definite part of the industry of the country as a whole.

Several factors have influenced the development of a ferment of promotion on the West Coast which has already resulted in a number of new mills and will doubtless result in further building. Among these factors are: first, the condition of the lumber industry on the West Coast; second, the rapid development of the industry in the South; third, the pressure of accumulated funds in the banks of the country for investment; and, finally, the turning of a number of the older Eastern companies to the West as a source of supply for pulp. The ferment of promotion working

on the West Coast has already resulted in more building in the industry out there during the past five years than anywhere else in this country in the same period. More building is ahead and it is apparent, because of the way in which development has taken place, that there will be considerable grief experienced before reasonable stability is reached.

Owing to the fact that no representative from the Association had visited West Coast mills for several years and owing to wide-spread interest in western development, the Secretary of the Association spent seven weeks on the Pacific Coast during the past season. Practically every mill was visited, conferences were held with industrial committees of Chambers of Commerce and bankers and talks were given before Chambers of Commerce, Lumbermen's clubs, etc. A report on the visit to the West Coast has been published with assistance from the western mills, and given wide circulation not only in the industry but among Chambers of Commerce, banks on the Pacific Coast, and others. An effort was made in this report to give a fair and reasonable picture of the situation and at the same time to indicate the necessity for the most thorough investigation of all of the factors entering into the building and operation of a mill before development was begun. There can be no question but that the visit of the Secretary to the West Coast and the wide distribution of the report have been helpful in emphasizing to the business men of the Northwest the necessity for reasonable conservatism to the end that development as it comes shall be sound, permanent and profitable. At no time has the Association or the industry opposed in any way the sound development of the industry in any section of the country. It feels, however, that so much is involved in the financing and building of a mill and a profitable marketing of the product that it is justified in emphasizing the necessity for thorough investigation and full knowledge of all of the factors involved.

With the large supplies of timber in the Northwest there is no question of gradual expansion of the industry in the Northwestern states. This development is bound to affect the industry in the East and South and it is, therefore, more than apparent that the industry in the country as a whole should take full cognizance of trends of development in every section and should work more closely together along legal lines, always, of course, to see that progress in the industry is made on a sound, stable and reasonably profitable basis.

In 1920, when the demand for information as to the industry began to develop, both from within the industry and at that time more largely from banks and other outside agencies, it was felt that this service could be made of much more direct value if it could be put into the hands of a man who could give full time to the service and to the development of the right kind of information for the trade and business press in particular. After several months of discussion of this particular service the Secretary was authorized to employ a man of newspaper experience and Warren B. Bullock, who is now Manager of the Import Committee of the American Paper Industry, was employed in December, 1920, as Director of the Information Service. Under Mr. Bullock the Service was extended along several different lines. A monthly printed bulletin was issued which was sent not only to the membership of the Association but to some 200 banks in the different paper-making sections. The constant call for informative material as to the industry from other national industries, from organizations of business men, and from technical schools, resulted in the development of what was in fact a circulating library of available moving picture films as produced by a number of the mills and one or more sets of colored lantern slides were developed as a phase of the library. A surprising distribution of films and slides was given throughout the time that Mr. Bullock was in charge of the Information Service. This distribution has been continued somewhat since he left the Association.

As a newspaper man of long experience, Mr. Bullock was able to put out a great deal of matter for the trade, business and public press, and was particularly helpful in connection with publicity for annual meetings, special conferences, etc.

Since Mr. Bullock left the Association to manage the Import Committee it has been necessary to discontinue certain activities which he carries on as a newspaper man. The informational phase of the service, however, has increased; it has been considered a function of the association to meet this demand.

The importance of a properly organized Information Service and of right contact with other industries and with the public generally is so great that as soon as funds are available it would seem as if the Association should again have the service of an experienced newspaper man. Such a man would be invaluable not only in extending the service of the Association as a clearing house for information but in taking the industry to the public and particularly the larger consumers of paper, in such a way as to make the public familiar with the intricate problems involved in the manufacture and marketing of pulp and paper. It is safe to say that if it had been possible to continue Mr. Bullock as Director of the Information Service and if through him the story of the industry could have been told to the public of the West Coast states, the industry might have avoided the difficult competition which is promised from the overbuilding of the industry in the West Coast states.

Foreign Trade as an Outlet

Consistently during the past eight years the staff of the Association has made every effort to secure facts as to foreign markets and foreign manufacturing conditions. So little accurate information as to the raw material situation and manufacturing conditions in Scandinavia was available to the Secretary in the early years of his work that it seemed very desirable to secure first hand information; therefore in the summer of 1922 in company with Mr. Geo. W. Sisson, Jr., past president of the Association, he spent nearly two months in Scandinavia and Germany. Because of the limited funds of the Association he paid his own expenses. This trip of the Secretary has proven invaluable to his work in the Association since 1922. It should be of exceeding value to the Association and the industry if a representative from the Association could make annual trips to the pulp and paper producing countries of Europe.

In this matter of foreign contact and information as to foreign conditions the Association owes much to the Paper Division of the Bureau of Foreign and Domestic Commerce. This Division was created upon the request of the industry through the Association in 1922 and the first Chief of the Division was selected by the Association. The work of this man, Mr. John Matthews, Jr., was soon recognized in the Bureau of Foreign and Domestic Commerce and he was advanced to the position of Assistant Director of the Bureau. His duties as Assistant Director have prevented him from giving constant attention to the work of the Paper Division. His assistant in the Division has been doing good work but the service rendered has not been all that it might have been, in large part because of an apparent lack of interest in the industry in foreign trade and therefore in the work of the Division. In other words, the Department of Commerce was very ready to develop a special Paper Division in the Bureau of Foreign and Domestic Commerce but the Division has not been able to function as effectively as divisions serving other industries because it has not been used as it might well be used by the paper industry.

Out of the contact of the Association with the efficient work of the Bureau of Foreign and Domestic Commerce there came information as to the valuable service given certain of the other larger industries of the country by special trade commissioners who were provided by appropriations granted by Congress to the Department of Commerce. These men were selected by the industries which they represented. Late in 1926 the Association made formal request to the Bureau of Foreign and Domestic Commerce for inclusion in the appropriations to be asked for the year beginning July 1, 1928, of an item for a special pulp and paper trade

commissioner for Europe. Even though the Bureau felt that the industry had not made full use of the Paper Division of the Bureau they acceded to our request and put into their askings for the Department for the coming year an item of $15,000 for a pulp and paper commissioner. A special committee from the industry, headed by Norman W. Wilson of the Hammermill Paper Company, past president of the Association, made a trip to Washington in October, 1927, and appeared before the Director of the Budget in support of the item for a special pulp and paper trade commissioner. So many requests from other American industries for special commissioners were received that the Director of the Budget did not include in the budget report to Congress the item for special commissioners. Therefore, the Association went directly to the Congressional Committee having these appropriations in charge and we are much indebted to Congressman Milton W. Shreve of Erie, Pa., Chairman of the Committee, for his interest and support of the askings for the industry. Through his support, and that of other members of Congress, appropriations were increased so that there is every evidence that a special pulp and paper trade commissioner for Europe will be made available for the year beginning July 1, 1928. Doubtless the Association will be asked by the Bureau of Foreign and Domestic Commerce to recommend men qualified for the position and it is hoped that it will be possible to find a man or men who know pulp and paper thoroughly, who can be appointed to represent the industry in Northern Europe, in particular.

Research and Technical Control

It is probable that the part which the American Paper and Pulp Association can play most effectively in research and technical control in the industry is that of stimulating these activities through bringing to the industry information as to research and technical control in the industry in other countries and in other industries in this country. Much more can be done along these lines than it has been possible for the Association to accomplish with its limited staff and limited funds.

The Technical Association of the Pulp and Paper Industry has gone much further and rightly so in emphasizing the value of research and technical control than has been possible for the American Paper and Pulp Association. Through the efforts of a secretary trained in the industry and through various committees to which have been assigned various technical problems of the industry, this Association has accomplished a great deal for the industry, both in stimulating interest in research and in technical problems and in serving as a clearing house of information as to the most modern practice in various manufacturing operations and in mill research problems. Beyond a doubt the Technical Association can accomplish more and more for the industry as the years pass, particularly if the mills will give larger support to the Association in the way of corporate memberships.

You will hear at this 51st Annual Meeting of the Association from an executive of one of the larger companies who is better qualified to speak upon the subject of technical control in the mills than any one connected with the Association. Mr. Ernst Mahler, Vice-President of Kimberly-Clark Company, has made a signal success of his work as a technical man in the industry and his paper on Technical Control, to be given at this meeting, should be given the most thorough consideration by the industry.

Because of his scientific training and long contact with educational work your Secretary has been deeply interested in the technical phases of the industry and particularly in the furtherance of technical control in the pulp and paper mills of this country. Unfortunately, the pressure of other work and the fact that the Technical Association is particularly interested in this subject has made it impossible for him to carry on activities which the Association could well undertake to further technical control in the mills. The problem of bringing about technical control in pulp and paper mills is not nearly as simple as it appears to be to the outside chemist and engineer not familiar with the paper industry. Regardless of the many improvements which have been made in the mills there is, after all, comparatively little standardization in manufacturing processes possible for the industry. Rule of thumb methods still continue and because of the elements of art in the manufacture of the higher grades of paper, in particular, it is probable that standardization will come slowly. Until standardization is achieved but limited progress can be made in the direction of complete technical control.

Cost and Financial Service

In view of the recognized importance of proper cost knowledge in the industry and in view of the fact that it would not be difficult for the industry to determine the considerable number of mills which do not have satisfactory cost systems, it seems almost like a serious charge against the industry that more than 10 years of activity on the part of the Cost Association of the Paper Industry has resulted in only partial success in bringing proper cost methods into all of the mills. In seeking support for the Cost Association, large mills which are doubtless more harmed by the price cutting methods of smaller mills than other mills of less consequence have indicated that they have their own cost systems and, therefore, are not interested in the Cost Association. Certain other mills indicate that they have gotten along fairly well without what they term an expensive cost system, and, therefore, they are not interested. Yet repeated unfortunate experience has proven that the mills, large or small, which do not have an adequate cost system and, therefore, do not know what it is costing to produce paper are the mills most likely to upset the market by radical and unreasonable cuts in prices not justified by market conditions. It is indeed surprising that the mill having a good cost system and, therefore, appreciating its value should not be the first to demand that the Cost Association shall be so aggressive in its educational work that the industry shall not go through another five year period without every mill having an adequate cost system and knowing its costs thoroughly.

Linked up with the necessity for a proper knowledge of the cost of manufacturing and marketing pulp and paper is the desirability and further, what we believe will become a necessity as the years pass, of a thorough knowledge of mill finance. We hear much today of the importance of railroad finance, agricultural finance, shipping finance, etc., and these are considered to be vital national problems. The problem of mill finance is equally important to the paper industry and the time must soon come when the industry, through such an agency as the Cost Association, or a Cost and Finance Bureau of the American Paper and Pulp Association, shall develop for the benefit of mill executives the same type of information as to mill finance as is now being so well developed by the Association as to production, shipments, stocks, consumption, etc.

Committee Activities

As indicated previously in referring to the value in Association work of standing versus special committees, the Association has tried to bring committees into activity only as there was a definite need for them. All too commonly in organized effort today a discussion of any subject seems fairly well concluded if a committee is appointed to go into the matter, with the result that the appointment of a committee is often the end of the activity rather than the beginning.

It is a sound principle in trade association work to have as much of the work of the Association done by the members as possible and commonly the best way in which to secure the help of the members is through service on a committee of real importance to the Association and its work. With this end in view the Association has had, during the past year, several committees at work upon necessary activities. These committees and their work will be described briefly.

(A) Membership Committee

During 1925 and 1926 the Membership Committee of the Association, under the Chairmanship of Mr. Chas. A. Gordon, of Oxford Paper Company, was exceedingly active and did a splendid piece of work in adding largely to the membership of the Asso-

ciation. As membership activities are continuously necessary in the Association it seemed desirable to appoint a Membership Committee for the present year. However, after the appointment of the committee it was found that the proposed plan, which will be mentioned later, of changing the basis of membership dues, made it seem likely that the question of dues to be fixed for new mills as they come into the Association would be somewhat difficult to answer and might prove an obstacle in the work of the committee. Therefore, the Membership Committee has not been active during the past year. However, the officers and the staff of the Association have continued the usual membership activities and several new mills have been added to the Association and two associations have been affiliated or have declared their intention to affiliate. These are the Bureau of Envelope Manufacturers of America, which came into the Association during the past summer, and the Wall Paper Manufacturers Association of the United States, which has just declared its intention to affiliate.

In this connection, a new form of membership was decided upon during the past year by the Executive Committee of the Association. This action resulted from the application for affiliation from the Supply and Equipment Association, Inc., of the American Paper and Pulp Industry. This Association has been in existence for several years and has been very helpful to the American Paper and Pulp Association through lending its assistance in legislative matters and through direct financial assistance to such special activities as the Woodlands Section and the development of foreign trade. After the most careful consideration by the Executive Committee of the Association it was decided in the fall of 1927 to invite the affiliation of the Supply and Equipment Association as an allied organization, whose members should not have the right to vote or hold office in the American Paper and Pulp Association. It is expected that this affiliation will be completed before the termination of the present annual meeting.

(B) Tariff Committee

As the question of proper tariff protection for the pulp and paper industry is of vital importance to the welfare of the industry and as the tariff question, unfortunately, is still a political question in this country, the Executive Committee deemed it a wise precaution to have a strong Tariff Committee in existence for the purpose of watching the tariff situation carefully, that it might be ready to function when the need comes. Therefore, a strong committee was organized early in the year, with Mr. Milton E. Marcuse of the Bedford Pulp and Paper Company of Richmond, Va., as Chairman.

Upon the suggestion of Mr. Marcuse a careful study of the history of the paper tariffs of the United States was made during the past season and published in pamphlet form. This pamphlet has received fine recognition not only in the industry but from other industries and from various governmental departments. The Committee, through the Association, is constantly gathering information which should be of assistance if and when the tariff question is again actively before Congress. A meeting of the Association's Tariff Committee will be held during Paper Week.

(C) National Waste Utilization and Stream Improvement Committee for the Pulp and Paper Industry

As the work of this Committee was described at some length under previous reference to an engineer in the paper industry no further reference will be made to its activities. Mr. Clarence M. Baker, the Association's Engineer, who is Secretary of the Committee, will be at the Association headquarters at the Waldorf-Astoria Hotel during Paper Week and it is expected that he will make a brief report on his work at the Annual Meeting.

(D) Classification of Paper

As clear and adequate definitions of various grades of paper and a satisfactory classification of paper are very important questions in the industry, a Committee of Classification and Definitions was appointed by the Association some four years ago. This earlier Committee with the able assistance of Dr. Clarence J. West of the National Research Council, developed what it had seemed impossible to get together up to that time and that is a series of paper definitions and workable classification. Report of this committee was printed by the publishers of the PAPER TRADE JOURNAL and given wide circulation in the industry. Though these definitions and the classification were never accepted officially by the industry, yet they proved of inestimable value and the surprising thing is, in view of the recognized value of the report of this committee, that such a series of definitions and classifications were not gotten out by the industry years ago.

During the past four years, and particularly in view of the important work of the Import Committee of the American Paper Industry, and the necessity for better definitions and classification in connection with statistical activities, it was found that the definitions in particular needed revision. Therefore, early in 1927 a Committee on Classification of Paper was appointed with Mr. R. Frank McElwain of the Crocker-McElwain Company as Chairman. This Committee was made up largely of technical men, including Dr. Clarence J. West of the National Research Council, who had served so efficiently on the previous committee, and representatives of the Bureau of Standards and the Office of the Public Printer. Again Dr. West, who is Vice-Chairman of the Committee, carried the burden of the work of revision. A meeting of the Committee was held in Washington in December, 1927, to pass finally upon the revision of the previous report. This has now been issued in booklet form. Again it seems necessary to indicate that this series of definitions and classification have not been officially accepted by the paper industry. As important as the matter is, it is probable that complete and official acceptance of the revised definitions and classification by the industry will not take place for several years to come and in the meantime effort will be constantly made to correct, improve and complete the definitions.

(E) General Committee on Carton Packaging

As the result of an investigation of the use of fiber cartons for the shipment of sheet papers by Mr. Kimberly Stuart of the Neenah Paper Company, and a report by Mr. Stuart on his work before the Writing Paper Manufacturers Association, request was made by that Association to the American Paper and Pulp Association for the appointment of a general Carton Packaging Committee, to be made up of both manufacturers and merchants. Such a committee was appointed in 1926 and Mr. Kimberly Stuart was selected by the committee as its Chairman. A third meeting of this committee was held early in 1927 in Chicago and full reports were made as to investigations of practicability of using cartons for the shipment of paper by both manufacturers and merchants, members of the committee, and by Mr. Albert W. Luhrs of the Container Testing Laboratories, Rockaway, N. J. It was emphasized in all of the meetings of this committee that the purpose of the committee was to investigate only and not to carry promotion of use of the fiber container, particularly as there was not unanimity of feeling among manufacturers and merchants as to the value of the fiber container.

At the last meeting of the committee, held in Chicago in October, 1927, it was felt that the purpose for which the committee had been appointed was achieved and, therefore, the committee was disbanded with the appointment of a small special committee, with Mr. Stuart as Chairman, to bring together the findings of the committee for publication in pamphlet form. As soon as the pamphlet is printed the committee will be disbanded and the work of the committee will be entirely completed.

(F) Simplification and Standardization

A committee on Simplification and Standardization, with Mr. S. L. Willson of the American Writing Paper Company as Chairman, was appointed at the opening of the present year. As this committee has felt that its work is largely the dissemination of information as to simplification and standardization it has seemed best that it should function through the staff of the Association and, therefore, it has not been active during the year. The committee has held itself in readiness to come together whenever ques-

tions of simplification and standardization might come before the industry.

(G) Committee on Statistical Procedure for the Paper Industry

As the work of this committee, under the Chairmanship of Mr. C. B. Morgan of the S. D. Warren Company, was described at some length in the discussion of the statistical service of the Association, no further reference will be made at this point to the work of the Committee. As the committee in fact completed its activities with the acceptance by the Bureau of the Census of the revised pulp and paper schedules the committee has been disbanded.

(H) New Uses of Paper

Appreciating the work that has been done in a number of other industries in the development of new uses for commodities and in trade extension it was felt that something of help to the industry might be accomplished by a small but representative committee which could investigate the question of new uses of paper. Therefore, a committee was appointed in 1926 with W. L. Carter of the Nashua Gummed and Coated Paper Company as Chairman. Shortly after the formation of the committee it held a meeting during Paper Week of 1927 and plans were suggested for determining the kind and character of paper imported into this country from foreign countries and also for determining the kinds and quantity of papers consumed by other industries. As the carrying out of these plans involved the expenditure of money they were put up to the staff of the Association.

Feeling that there was value in the plans suggested by the committee it was reappointed for the year 1927 but little has been done during the year even though the plans as suggested would doubtless bring helpful results to the industry.

This question of stimulating new uses of paper is of so much importance that it is hoped that the committee will be continued and financial means given the committee to carry out the work which it has proposed.

Other Committee Activities

Two committees, advisory in character, namely, Advisory Committee on Taxation and Advisory Committee on Transportation Legislation, appointed in 1926, were continued during 1927. The idea of these committees was to have groups of men especially interested in taxation and traffic available in case legislation or other matters came before the Association. The Advisory Committee on Taxation, through its Secretary, Mr. Thos. J. Burke of the Cost Association of the Paper Industry, has taken up a number of tax matters during the past year and directly or through the American Paper and Pulp Association has put these matters before the members of the Association.

Certain advisory committees for the U. S. Department of Commerce, the Bureau of Standards, the Department of Agriculture, and certain of the government Forest Experiment Station, were continued from 1926 into the present year. These committees are in existence to serve as a liaison between the industry and the departments named.

Joint Committees With Outside Agencies

Two joint committees to function with outside agencies have been very active during the year. One of these is the Joint Committee on Approved Pulp Testing Chemists, of which S. Goldman, English China Clays Sales Corporation, is Chairman, and O. M. Porter of the American Paper and Pulp Association is Secretary. The second joint committee is the Paper and Pulp Committee of the Atlantic States Shippers Advisory Board. Mr. Porter of the Association is Chairman of this committee and he has been able to make his committee a very active one during the past year.

IV. Financing the Association

Adequate support for the work of the Association has been a difficult problem not only during the past 8 years but apparently from the very beginning of the Association, particularly from the time it took on a paid Secretary. This problem seems to have been met and apparently solved in one period and then, because the solution was not on a permanent basis, the Association was again faced with the problem in a subsequent period.

When the present Secretary came into the Association in 1920 he found it to be financed on the basis of what were in fact voluntary contributions from the affiliated associations. These voluntary contributions made up a large part of the income of the Association. Outside of this support there was a very small income from membership dues from a number of mills which had direct membership in the Association and which were grouped in what was then known as the Unclassified Division of the Association.

A most thorough study of this whole situation has been made during the past year and a plan for the fixing of dues on a gross sales basis was submitted to the Executive Committee at a meeting in November, 1927. The plan seems to be a sound one and doubtless could be worked out on a basis that would be satisfactory to the entire membership. In fact, upon request from the officers of the Association more than 150 mills submitted their gross sales figures for 1926 on a confidential basis. These formed the basis for the development of the plan referred to above.

This return indicates the interest of the member mills in a sounder plan of financing.

For a number of reasons, however, it has seemed wise to the Executive Committee to delay action on the proposed plan of the fixing of dues on a gross sales basis and to continue the financing of the Association for the coming year on the same basis as that in existence during the past three years.

Whatever the further development of the Association may be, the important problem before it will be the adoption of a plan of financing which will be considered fair and equitable by individual mills of all classes and which will produce funds adequate for the proper carrying on of the activities of the Association.

Raw Materials for the Industry

An adequate and a permanent supply of raw materials of both primary and secondary character are fundamental to the future profitable operation of the pulp and paper industry. This is a truism which might well be applied to any American industry. However, the raw material problem is of unusual significance to the pulp and paper industry because its supply comes from what is today considered to be a slowly disappearing natural resource.

The Secretary and the Association

The secretary of a trade association of the type of the American Paper and Pulp Association, with its many varied and important activities, must be more than a Secretary if he is to serve the Association effectively and the industry which it represents. The Secretary of the American Paper and Pulp Association must be in fact the general manager of a business organization made up of a great many individual business units. Industry is demanding much more from the secretary or the general manager of a trade association than these names indicate, when applied in the ordinary business corporation. The secretary must in fact be a leader in all of the organized activities which make for mutually beneficial service and for better business.

Should a larger and more comprehensive organization be developed for the paper industry in the years just ahead built up as a superstructure upon the foundation which has been laid during the past 8 years, the governing board of the organization must expect to place a man in charge of the organization who can not only function as a secretary and a general manager but who shall also be a leader for the various elements involved and who can unify the industry in its efforts to solve common problems and strengthen its contacts with other industries, with governmental agencies and the public.

The trend towards mergers in business has apparently influenced a number of industries in the direction of similar trends towards the merging of organizations serving those industries. Several industries have already merged their various associations into

superorganizations known as institutes and other industries are now considering such mergers of trade organizations.

As already emphasized, acquaintanceship and friendly contact, plus the confidence which results from such acquaintanceship and contact, are very fundamental to the success of a trade association. It may be that this trend toward the merging of associations serving an industry has some danger in it. It seems more than probable that in certain of the industries where centralization of association effort has been carried through by dominant groups a reverse trend will appear leading back towards decentralization and the strengthening of the smaller groups where manufacturers producing a similar commodity can be more closely associated in meeting the problems inherent in the work of the smaller group.

As men, in their development as human beings, apparently have to go through certain periods of growth, so organizations of men seemingly must proceed normally in their evolution from one period of development to another. As the paper and pulp industry is now organized and as the associations serving it have been gradually developing from one period or stage of growth to another, it is quite possible that the most satisfactory future development of the Association will be the steady advancement of the present organization by gradually increasing funds for its work and strengthening of personnel of its staff.

Secretary Leaves the Association

After eight strenuous and yet very worth while years it was difficult for the Secretary of the Association to come to a decision to leave the Association and the industry for work with the Chamber of Commerce of the United States at Washington. Decision to take the new work at Washington was arrived at finally only because of what appear to be the larger opportunities and wider contacts, which promise to result from the development of an entirely new department in the Chamber; namely the Trade Association Department.

While the experience of your Secretary in the work of the Association, since 1920, has often seemed to him to have been made up of more than the average number of difficulties in such work, yet it has been an experience of exceeding value and one which will be remembered always with appreciation and gratitude. Coming into the Association in 1920 with certain preconceived ideas of a business man's organization, the process of adjustment to the new work with resultant necessity for changing preconceived ideas, was not an easy one. Hard work was put into getting acquainted with the details of the industry and with the work of the Association. Out of this hard work came a belief in the industry and the men back of it, and an enthusiasm for the work of the Association serving them, that made every experience seem worth while and every effort to improve the Association as a service organization seem more than justified. After eight years the Secretary is confident beyond a doubt that in no other industry in this country is there any finer group of business men than in the paper industry and the most inspiring idea to him in all of the work has been the opportunity of serving these men and the industry in a way that should make for more satisfactory business for the industry and that from every angle.

It would be impossible to enumerate the men who have been of help to the Secretary in his work with the Association. With deep appreciation he takes this occasion to express his heartfelt thanks for the friendly counsel and help which these leaders of the industry have given so generously through the years.

The Secretary has been fortunate in having as his immediate assistant the man who has been appointed to succeed him as Acting Secretary, and the other men and women who have worked with him in the Association through the trying years of reorganization and development. As with the executive in any organization, the Secretary has often been given credit for work that has been done by his subordinates. There has been team work and it has been this harmonious working together of the men and women in the offices of the Association which has made the years particularly attractive and worth while. Few of the members of the Association appreciate the hard work that has been put in by the staff in trying to bring about results and results that often seem to be of so little importance to the industry. It isn't necessary that the members should appreciate the hard work of the staff. That is to be expected but it is fitting that the Secretary should give public recognition to the fine service which the Association and the industry has received from the men and women who have worked with him since 1920.

In his new work as Manager of the Trade Association Department of the Chamber of Commerce of the United States at Washington it may be that the Secretary will be in a position to assist the Association serving the paper industry and perhaps at times the industry itself. The opportunity for such assistance will be welcome indeed and it is hoped that these opportunities will come often enough so that the friendly contact of the years with pulp and paper manufacturers and the men and women in the Association may not be broken. May it not be that the friendly helpful contacts which we have been able to maintain with other men and women through the years will count more, when the time comes for summing up of life's activities, than what we have been able to lay up in monies and goods or even in the way of reputation, much as these may mean at times.

ADDRESS BY ERNST MAHLER

Ernst Mahler, vice president of the Kimberly-Clark Company delivered an interesting address explaining the functions of the Operating and Technical Superintendent. Mr. Mahler's remarks were in part as follows:—

I am not trying to preach a sermon, nor am I, in the slightest degree, trying to reform the management of our great industry, nor expound the greatness of the company which has entrusted me with its manufacturing department; but to tell you from a cold business standpoint, and from fifteen years of experience what my views are as to the management of the manufacturing division of any pulp and paper mill.

I think we all agree that our industry in the last ten years has undergone vast changes. From one of the most highly profitable basic industries it has become, right in line with all other large industries, one of tremendous volume and narrow profit margins per unit.

While this change has been going on, on the economic side of the picture, the manufacturing itself has changed from an art to a science. While for many years paper or pulp making was a craft handed down from father to son, or acquired by each worker in many years of manual training, it gradually assumed, by force of necessity, its place among the big industries in which science plays the leading part.

What I am talking to you about is not a lot of theories but the experience I have gained in working fairly successfully, with a large organization by injecting technical men into its management in conjunction with practical operators on a purely business basis. There are places for practical men and technical men in every organization, but the activities of both must be strictly defined, and each must be put only where these activities show a definite trend toward more efficient operation, and, therefore, the proper return for the compensation paid to them.

Before discussing the functions of the technical man in the pulp and paper industry, and where he can be fitted in as a useful member of the organization, we should stop and reflect for a moment upon what the purpose of a paper or pulp mill is, and what such institutions are trying to accomplish.

The purpose of the manufacturing business is to produce a product at a profit. Therefore, the vital function of the management must be to produce a product of the highest quality at the lowest possible cost. To enable a manufacturer to do this successfully, he must have a well organized supervising staff who have under them a well trained and intelligent working force. The processes,

either pulp or paper, in each individual mill must deliver an absolutely uniform product. Therefore, successful manufacturing calls for intelligent repetition of standardized methods by large, well coordinated groups of people.

Paper mills in the past have been isolated units controlled by a master operator who did most of the thinking and planning for the entire manufacturing organization and who was quite often filled with notions and even superstitions.

It is very evident in these days of strenuous competition, that first of all, large industries are gradually taking the place of small industries, and secondly that due to ever receding prices all the return a pulp or paper mill expects to make must be made largely through the efforts of its buying and manufacturing organization, and not, as in the olden days through the efforts of its sales department. Therefore, in the present light, the manufacturing department, which for many years in the past was nothing more or less than a necessary evil to keep a sales force busy, today assumed the most prominent place in the entire organization set-up of a pulp and paper mill.

Economic conditions have forced the paper and pulp industry, as probably the last one of the big basic industries of the country, to the necessity of scientific management and to a recognition of the fact that their process is one of chemical engineering and that to be successful there must be a definite outline of duty for the superintendent or master operator, of whom we spoke just a few minutes ago, the chemist, the engineer, and the chemical engineer. In other words, management has become a problem of defining functions and of building men to carry them on, and to coordinate them.

By defining functions carefully so that each man has a clear space to grow in, by separating functions so that friction and lost motion between individuals is eliminated, and by coordinating these people in such a manner so as to maintain a balance, a condition conducive to harmony and mutual helpfulness is obtained. Cooperation naturally results. It is, therefore, very evident that the superintendent should not be burdened with all the functions, such as maintenance, power, plant supervision, employment, and other auxiliary and developmental duties. Inasmuch as the success of a mill is based on producing a quality product at the lowest cost, the duties of the superintendent must be confined entirely to the operation of manufacturing the best pulp and paper with the least waste, to do which requires intelligent repetition of standardized methods.

The first division of the technical organization should be a Research Department. Now as far as research is concerned, I want to say this: If in years to come you are not going to have any competition, and if you do not need profits to pay dividends to your stockholders, then you do not need a research organization, but if you want to keep your business prosperous, you must build for the future and must be fortified to meet competition. Therefore, you must spend money for the development of new ways and means to be a leader in the particular field to which your mills are devoted, or you must be satisfied that someone else is going to take that leadership from you. I do not think it is necessary, that, at this stage of the game, a research laboratory in the pulp and paper industry should bother itself with the finding of new metals or with trying to disprove the Einstein theory, but that certain men who are qualified through the best theoretical training obtainable should attack problems in your mills that can be vastly improved, or where great economy can be introduced, such as in the white water problem or the sulphite bleaching problem, or any other such problems wherein savings would help in a large measure to overcome the reduction in prices.

The next division is the Technical Division, which might be descriptively called 'the building in' division. It is their function to study the operations critically and scientifically, watch the product and process closely, stop small wastes, and work out, by a close study of the process, better practices and methods. The technical man's contact with the operator is in meetings where they discuss operating methods and the product, and jointly work out with the operator standard process practices. When there are involved basic principles which are vague, the problem must be passed on to the Research Division for study. I shall refer to the standard practices a little later on.

We now have, in practice, two superintendents for each department; one is the Operating Superintendent and the other is the Technical Superintendent. Their duties summed up in a few short sentences line up as follows:

OPERATING SUPERINTENDENT

1. Have charge of all the tools of production, which are materials, equipment, process and men.
2. Keep the product up to the standards established.
3. Develop foremen who teach the standard practices to every individual, and who make men assume their individual responsibilities.
4. Watch for and develop understudies to follow through in the event of vacancies.
5. Teach the foremen to check up on new men to see that only men who are up to our standard remain to be assimilated.
6. Pass problems to the Technical Superintendent and help him by answering his questions.

TECHNICAL SUPERINTENDENT

1. Have charge of process or standard practice.
2. Check up on all samples, testing station logs, and reports, daily, and go over the process in detail for variation or tendencies toward variation, reporting to the Operating Superintendent for corrections.
3. Check up tickler against standard practice periodically to eliminate tendencies not apparent daily.
4. Maintain a tickler file to remind the superintendent of periodic jobs like cleaning pipes, inspecting rolls, etc.
5. Evaluate new ideas and, if profitable and approved, work out the solution with the help of other agencies, and with the help of the operating superintendent and the staff. After final approval he must incorporate these ideas into standard practice and teach them in class.
6. Develop standard practice in meetings with foremen and head operators.

The development of the standard practices is a long and tedious undertaking, but I cannot see where there can be a substitute for doing each job the one best way if you want to make progress and meet or beat competition. In developing these standard practices, it is very apparent what lack of knowledge there is and what wide variation of opinion exists on even the smallest job. The result of the development of one standard practice brings out the necessity for another one further down the line. For instance, you cannot standardize on the best way of forming a sheet of paper if you do not standardize on the consistency; you cannot standardize on the consistency if you do not standardize work in the beater room; you cannot standardize work in the beater room if you do not standardize the pulp that goes into the beaters, and so down the line.

It is not only necessary to standardize methods in your own mills, but when you have reached a certain point in this program you will find out the necessity of standardizing on everything you may buy from the outside that enters into the process of your manufacturing. This means standardizing on all purchased materials. Therefore, it is found practical to set up an organization known as a Standardization Committee. This unit should be directed by a well trained engineer, whose duty is to work in conjunction with the Purchasing Department on one hand, and with the mill and technical organization on the other, so that nothing but the one best material is bought and so that the proper material is used in the proper place. In practice this means that you should buy only the best kind of oil, wrought iron pipe, dyestuffs, or most anything else, and that these materials should be properly applied to give the longest and cheapest service.

The greatest benefits that will be derived from the work of such a department are: First, that you will get the best service out of your purchases, and secondly, that by buying only the one best material and applying it to the proper place, you will reduce your warehouse inventories and liberate, thereby, a very large amount of your capital investment. In like manner, equipment and plant layout problems need study by a technical equipment division or plant engineer. An engineering and design division is needed to work out better, faster, more efficient, and more easily maintained producing equipment. A very careful statistical and cost procedure is necessary in order to learn from previous experiments and to bring out the sore places that need intensive study. The personnel problems also need technical study and research in building better leaders, better working incentives and conditions, scientific selective methods, better training methods, and all that goes to produce better morale and working conditions.

An organization such as this cannot be developed by an outside agency, but must be built little by little to fit the individual needs of the specific plant. The present men must be gradually bent to assume the new positions. Such a development takes a great deal of time and patience.

To start work in this line, a few figures must first be charted, best statistical, and as simple as possible. These, when assimilated, can be gradually developed to simple cost costs and to unit costs, with the material constantly getting more complicated. Then educational classes must take a definite part in the program, always teaching problems specifically applying to the work.

In our experience we at first thought men were only concerned with what they got in the way of pay, but we found out that a man's interest can be obtained by letting him know how well he is doing his work compared to the others, thus developing a desire to excell. This is more effective than a bonus.

There is no better way to get cooperation than by promoting the right man, because a good leader makes good men, and, conversely, no better way to lose cooperation and good will than by promoting the wrong man.

Under the conditions outlined the tradesman or operator contacts in meetings with a technical man, and he perceives that underlying all that he is doing, there are vital principles, or reasons, and causes which control his operations. He contacts with foremen, who are trained in classes to lead, teach, and improve habits. The employment department selectively starts in men who have the latent qualities necessary for success. The educational department provides courses of study. Out of this environment there is bound to grow a new type of individual of much greater and broader knowledge than any men that industry has had in the past.

College men must be very carefully assimilated. In our company they are passed, first into the Research Department where they are given technical problems and taught to refer to scientific books so as to solve their problems in a technical way. They are studied to find the type of work for which they are best fitted. All departments must requisition the Research Department for technical help. When requisitions arrive, these men are passed to the technical, laboratory, or research job for which they seem suited. If not satisfactory, they are released. If satisfactory, their training does not stop here. From then on they are responsible to their department Technical Staff Superintendent for growth. He outlines study courses for them, examines them periodically in knowledge, and criticizes their attitude toward their problems to see that a technical or scientific attitude is maintained. In other words, the new technical man is checked up to see to it that he gets the equipment or knowledge and experience necessary to successfully do his work.

All the foregoing lines up, as far as organization is concerned, as per the chart I am showing you here. I fully realize that I have only lightly touched upon all the various points, but I hope I have given you a few thoughts which might apply to your own manufacturing department.

In closing, I may just for a minute pause and reflect on the status of the pulp and paper industry at the present time. Due to the over-development of the industry in Canada, we are in the midst of over-production and the inevitable result thereof; namely, prices which are closely approaching bare cost, and in many grades below cost. The result from such an uneconomical condition will be the demoralization of the pulp and paper industry, provided the industry itself does not take the proper steps to bring its house in order. These steps are:

1. To produce the produce better and more economically.
2. To create a wider market for pulp and paper products.

The general procedure up to now has been that whenever a mill has brought out a new use for paper or pulp a great many mills have tried to imitate these products, which in itself has neither increased the market over-all nor has it in the long run shown a proper return to the men who created the new market or the imitation. If all the mental energy that is being used in trying to imitate each other would be employed to enlarge the outlets for our products it would not be very long before production and consumption would come into their proper proportions.

STREAM PURIFICATION PROGRESS

Clarence M. Baker, recently appointed engineer of the American Paper and Pulp Association, delivered an interesting and instructive address at the afternoon session, on "Policies in Waste Utilization and Stream Pollution." He said, in part:

"In developing the activities of the American Paper and Pulp Association in waste utilization and stream improvement, there appears to be three distinct lines of work for the engineer, viz: development and coordination of research in waste utilization and stream improvement, both at individual mills and in specialized groups of the industry; collection, assemblage, and dissemination of information on the subject, both through general statements and upon request; representation of the industry before state and other officials active in stream development to prevent radical leigslation or policies and develop practical cooperation procedures.

"In order to successfully carry out this program individual mills of the industry must cooperate with the engineer in furnishing information regarding research done, in progress or contemplated. In other words, there must be a free, unrestricted, and sincere exchange of ideas and data with the engineer acting as a clearing house to furnish information, not regarding one mill to another, but general information applicable to special or general problems. On the other hand, the engineer must respect and carefully guard confidences placed in him, that information received be not so used as to cause an injustice to any mill, other organization or individual.

"From the data at hand and studies already made it is evident that the paper industry is in many sections of the country a material factor in stream pollution. Any successful program must include active cooperation between the industry and state officials. A practical solution of the problem involves the development of economical processes for utilization of these wastes. If there is to be a proper coordination of activities there must be cooperation between the various mills of the industry in exchange of ideas, and the development and application of research.

"In order to develop and carry out this program, it is recommended that: committees representative of the pulp and paper industry be organized in each paper manufacturing state; working agreements be developed among the vartous specialized interests of the industry to study their own particular problems regarding waste disposal. In connection with this it will be necessary to raise funds to conduct essential research; mills cooperate with the association's engineer by furnishing data regarding research done, in progress, or contemplated, together with such other information as will assist in his activities; mills initiate a regular program of sampling and analyzing their

waste, either individually or in connection with state officials. The data thus secured will not only indicate the extent to which the mill may be a factor in stream pollution, but often, also, opportunities for the installation of profitable recovery processes."

MEETING THE NEW COMPETITION

O. H. Cheney, vice-president of the American Exchange and Irving Trust Company, gave an illuminating address on "Meeting the New Competition" at the morning session. In the course of his speech, he said:

"It is a fundamental fact that the paper and pulp industry is what it is today because of the growth of advertising. The prosperity of the paper industry is bound up with faith in advertising—the faith of the business man who uses it and the faith of the consumer who reads it. Any marked change in the consumer acceptance of advertising or in the attitude of business towards those types of advertising which use paper must vitally affect the paper and pulp industry. The paper industry is economically on a sound basis as long as advertising is on a sound basis. The chief reason why we now use nearly twelve times as much news print per capita as we did fifty years ago is advertising. Advertising is the reason why a New York newspaper uses up about 2000 acres of forest a year.

"I need not tell you of the persistent trend towards mergers and consolidations in your industry and of the increasing complexity of the international ramifications of the leading units. It was inevitable, also, because of the vital necessity for huge volumes of water in the manufacturing process, that those in the industry should go into the power field. In fact, as paper manufacturers, some concerns have naturally become good power producers. The reason why I bring up these two developments is that, while they are inherently sound, they have also been a source of confusion to the economics of the industry. Is it inevitable that constantly growing aggregations of plant and capital in the industry mean better profits for the whole industry? Does a plant have to be a big plant and a growing plant to be efficient and profitable? And of what benefit is it to the paper industry as a whole if some plants can sell pulp and paper at a loss and still make money by selling power?

"How can facts be used to overcome the constant menace of over production? I don't know what the Department of Justice, the Federal Trade Commission and Congress have decided in the last five minutes on the proper use of trade association statistics. But the paper industry is here confronted with the identical problem of most other industries. It must take thought and action to work out its own destiny—but there is just as urgent a duty to all American business, to our whole economic existence, for all industries to join together on some rational and legal and sound economic program for meeting this problem."

RESOLUTIONS

Milton E. Marcuse, chairman of the Resolutions Committee, presented the following resolutions, all of which were unanimously adopted:

Dr. Hugh P. Baker

WHEREAS, Dr. Hugh P. Baker has been signally honored by the Chamber of Commerce of the United States in his appointment as head of its new Trade Association Department, and

WHEREAS, Dr. Baker has ably handled the affairs of the Association during the past eight years, be it therefore

RESOLVED, That this Association expresses its appreciation of his aggressive service in the interests of the industry, and wishes him all possible success in his work.

Forestry

WHEREAS, The Paper Industry of the United States is a wood-using industry, with growing dependence on the productive capacity of American timberlands, and

WHEREAS, There is ample forest land in the United States to furnish the raw material for the wood-using industries of the country in perpetuity if protected from fire and properly managed, and

WHEREAS, The practice of forestry by the Paper Industry is in reality a business problem involving equitable taxation and adequate returns on invested capital, and

WHEREAS, Aggressive leadership is needed to secure the necessary fundamental research for the application of practical forestry to sustained production, be it therefore

RESOLVED, That the Association, in recognizing the necessity for aggressive leadership for the solution of this problem, recommends active support of its Woodlands Section as the means of crystalizing action by the paper industry to this end, and furthermore does hereby record its unqualified approval of the pending legislation covering adequate forest research, known as the McSweeney-McNary Bill.

Official Rules For Weighing, Sampling and Testing Wood Pulp

WHEREAS, A Joint Committee representing the American Paper and Pulp Association, the Association of American Wood Pulp Importers and the Technical Association of the Paper and Pulp Industry, has prepared tentative rules and regulations looking toward a high, uniform standard of pulp sampling and testing, and

WHEREAS, This committee's Rules have been accepted generally throughout the industry, be it therefore

RESOLVED, That the Association formally approves and adopts the Rules and Regulations for Weighing, Sampling and Testing Wood Pulp as proposed by this Joint Committee.

Costs

WHEREAS, Modern Competition demands the greatest efficiency and lowest possible costs consistent with quality and service, and

WHEREAS, There appears to be some lack of appreciation of the value of adequate and uniform cost accounting methods throughout the Industry, and

WHEREAS, The Cost Association of the Paper Industry is well equipped to carry on educational work looking towards the general adoption of practical cost accounting methods, be it therefore

RESOLVED, That the Association approves the work of the Cost Association and urges its support generally by the Industry.

Foreign Trade

WHEREAS, There appears to be opportunity to develop foreign markets for the paper industry of the United States, BE IT THEREFORE

RESOLVED, That the Association favors cooperative effort to stimulate foreign demand and increase foreign trade, and requests the most active cooperation of the United States Department of Commerce through its Paper Section of the Bureau of Foreign and Domestic Commerce in facilitating this work.

Taxation

WHEREAS, Economy in federal and state administrations should be continued, and

WHEREAS, It is evident that their present efficiency can be maintained, with some general tax reduction, be it therefore

RESOLVED, That the American Paper and Pulp Association recommends that as rapidly as budgetary necessities permit the federal tax rate applicable to corporations be reduced to a figure not in excess of 10% (or to an equalized rate in case of any change in the rate schedule of the personal income tax) and be it further

RESOLVED, That the Association recognizes that the extent of any reduction in this tax must be governed by the state of the Treasury and the surplus balances available in the near future for such reduction; and, since the United States Treasury, through its Bureau of the Budget, is the only agency which has at its disposal

all the facts necessary to estimate future surpluses over normal expenditures, the Association indicates its approval of action following the estimates of the Treasury as guiding in this matter.

WASTE PREVENTION AND STREAM IMPROVEMENT

WHEREAS, One of the larger common problems confronting the Paper Industry of the United States today is that of waste prevention, and.

WHEREAS, This involves efforts on the part of individual mills, communities, states and the Federal Government, to prevent unnecessary waste and stream pollution, and

WHEREAS, The Association has realized the necessity of attacking this problem on a broad, cooperative basis, through the employment of a trained, sanitary engineer, be it therefore

RESOLVED, That the Association records its desire to develop the closest possible cooperation with other agencies, and particularly with state officials studying this problem, and stresses the necessity for adequate financial support of this work, under the direction of its engineer, Mr. C. M. Baker.

NATIONAL PAPER TRADE ASSOCIATION

WHEREAS, There are two elements essential to the success and progress of the American Paper industry, namely, the manufacturers and the merchants, and

WHEREAS, The paper merchants of the United States are organized through the National Paper Trade Association, and

WHEREAS, The National Paper Trade Association is now celebrating its Silver Anniversary—twenty-five years of organized service to the paper industry,—be it therefore

RESOLVED, That the American Paper and Pulp Association in convention assembled at its 51st Annual Meeting, does hereby extend its congratulations to the National Paper Trade Association and best wishes for continued success.

IN MEMORIAM

WHEREAS, In the wisdom of Almighty God, leaders of the industry have been taken from our councils during the past year, be it therefore

RESOLVED, That the Association voices its sorrow at their loss, and its appreciation of their constructive work for the industry:

Among those are:

Charles B. Bird, Bird & Son
Robert Gair, Robert Gair Company
John A. Kimberly, Kimberly-Clark Company
Eugene Maurer, Central Paper Company
Lawrence E. Nash, Nekoosa-Edwards Paper Company
James W. Oakford, Cherry River Paper Company.
Matthias Plum, Jr., Waverly Paper Board Company
Garrett Schenck, Great Northern Paper Company
A. H. Scott, Scott Paper Company

WOODLANDS SECTION

The Woodlands Section of the American Paper and Pulp Association held its annual meeting on Thursday, with morning and afternoon sessions. A number of interesting papers were presented. Foresters from Michigan, Wisconsin, Maine, Minnesota, Pennsylvania and New York were among those in attendance. The problem of growing trees to provide a crop of the raw waterial used by the paper industry was discussed by technical foresters and paper mill executives.

Forrest H. Colby of the S. D. Warren Company, Bangor, Me., discussed the general problem, pointing out that without pulp wood, the paper mills are helpless.

George W. Sisson, Jr., of the Racquette River Paper Company, Potsdam, N. Y., declared it to be an economic waste to deny proper use of public forest areas areas to industry, and pointed out that proper handling of public forests would allow utilization of the timber, and actually improve the condition of the forest.

Julian Rothery, of the International Paper Company, New York; John F. Preston, Hammermill Paper Company, Erie, Pa.; and W. H. Kenety, Northwest Paper Company, Cloquet, Minn., discussed the individual forestry problems of their respective companies, including Canadian as well as United States forestry development. C. W. Hurtubis, Hammermill Paper Company, Erie, Pa., discussed cooperative production of pulp wood by paper companies.

F. J. Sensenbrenner of the Kimberly-Clark Company, Neenah, Wis., spoke on "Forest Taxation."

"Water power is the one natural resource which renews itself annually. We may use our water power to the fullest extent and next year we have just as much as we would have had, had we utilized none. Not so with our forests. When we use a tree, that tree is gone. But fortunately our forests can be renewed. It is the element of time needed whicch impels us to think once, twice, and many times more, before venturing upon the herculean task of re-forestation.

When we plant trees and try to visualize a forest, it is not even for our children but for our grand-children or great grand-children But we must renew our forests. When I say "we," I do not have reference to any particular group of business men, nor any particular association or associations. I mean the people—all the people—the people who use the products of the forest—the people who use lumber and paper, and that means all.

Milton E. Marcuse in his address before the Natural Resources Industries session on May 4, 1927, said: "The Nation should not suffer for lack of wood products, if our citizens can be induced to undertake the growing of trees as a business, and if this undertaking can be begun without delay."

Leaving out of consideration the original cost with the compounding interest charges, the two big drawbacks or problems are, Fire and Taxes. Can we induce our citizens, as Mr. Marcuse suggests, "to undertake the growing of trees as a business?"

There must be a reasonable opportunity for profit, otherwise it would not be a business. In order that the business may hold out any hope for profit, the problems of Fire and Taxes must be solved. Taxes are a necessity, but unfriendly fires are not. Nevertheless, fire and taxes seem to go hand in hand with civilization. The people—settlers, hunters, and tourists—must be educated among the lines of fire prevention. Much is being done along an educational line, but more should be done. We must work to reduce the fire hazard to the minimum.

The states appreciate the importance of forestry laws, but education will do more to put out a fire at its inception than the most drastic laws. To prohibit the building of a campfire would be as futile as prohibiting the drinking of "fire water."

Where legislation is needed is in easing off on current taxes. Let the "business of growing trees" pay its proportion of taxes, but let tthose taxes be paid out of the business not from year to year as the "business" is growing, but out of the "business" when it has materialized. Industries consuming forest products spread into practically every State in the Union. The people of every State are the ultimate consumers. The Nation as a whole is vitally interested in the conservation of our forests. There is no question as to available lands for re-forestation. There are millions upon millions of acres suitable for the purpose, but under past conditions lying unproductive—mere wastes. We can hardly expect the present generation to attempt to bring back the forests for future generations, if they must pay additional taxes annually for the privilege.

The Chamber of Commerce of the United States expressed itself on the question of taxing growing trees, in these words: "Taxation of growing timber should be based upon the principal of yield tax with reasonable uniformity among the States in such taxation."

Whether the forestry policies as evidenced by the legislation in the states of the past few years will have the desired effect of replacing to some extent our denuded forests, time only will tell. It may well be that greater inducements will have to be offered before we can hope for concerted action on the part of the present owners of the vast areas of cut-over lands. An absolutely satisfactory so-

lution of the problem will require much further study and experiment. Conditions peculiar to different localities may require different treatment, but the forestry laws of the different States should be as nearly uniform as practicable, taking local conditions into consideration.

There should not be such discrepancies in the forestry laws as there is between the Michigan Law and the Wisconsin Law as to the "yield tax" as it is called in the Michigan Law, and the "severance tax" as it is called in the Wisconsin Law. Yield tax in Michigan, 26% stumpage value. Severance tax in Wisconsin, 10% stumpage value.

According to the National Lumber Manufacturers Association "More than one hundred and thirty new forestry laws or amendments to prior acts relating to forest taxation, fire protection, and re-forestation" were passed in the year 1927 by the Legislatures of over forty of the States. But, of course, it is not quantity of laws but quality that counts.

In 1927 the appropriate amendment was adopted to the Wisconsin Constitution, so that the Legislature might pass laws encouraging re-forestation. As a result, we have Chapter 454, Laws of 1927, being Chapter 77 of the Wisconsin Statutes. I will quote the opening paragraph of that Chapter.

"It is the intent of this chapter to encourage a policy of preserving from destruction or premature cutting the remaining forest growth in this state, and of reproducing and growing for the future adequate crops of forest products on lands not more useful for other purposes so that such lands shall continue to furnish recurring forest crops for commercial use, all in a manner which shall not hamper the towns in which such lands lie from receiving their just tax revenue from such lands."

The first part of that paragraph sets forth concisely just what we are working for and the last part explains why complete exemption from current taxation is not accorded to "Forest Crop Lands."

Another interesting address during the proceedings was made by D. C. Everest, president of the American Paper and Pulp Association entitled "Business Leadership in Forestry."

The formation of a spruce production corporation was reported upon by Professor A. B. Recknagel of Cornell University, chairman of a committee to study the question, who reported progress with no decision as to what steps if any should be taken. He reported that it is profitable to grow spruce on abandoned farm lands in New York State. In the light of economic development it is not proper to allow these lands to remain idle. It has been demonstrated that on such lands spruce can be grown furnishing the necessary raw material for pulp mills that have no other source of supply. A committee of the New York Section of the Society of American Forresters is now studying this problem and expects to complete its report early in the summer.

Other speakers at the afternoon session were Donald Bruce of California, who urged that a company should establish its forestry policy upon business principles; S. C. Copeland on problems involving forest fire prevention. Dr. Hugh P. Baker, U. S. Chamber of Commerce spoke on the necessity for forest research. The session closed with an address by D. C. Everest, president of the American Paper and Pulp Association, urging that business, as such, should take the leadership in promoting the cause of forestry.

SALESMEN'S ANNUAL MEETING

The ninth annual meeting of the Salesmen's Association of the Paper Industry was held in the East Room of the Waldorf-Astoria on Thursday morning. The principal speaker was O. P. Pearson, statistician of the National Automobile Chamber of Commerce. "The Outlook for the Automobile Industry" was his theme.

Mr. Pearson declared that in less than thirty years the automobile industry has established itself as one of the key industries of the country. It has woven itself into the fabric of our industrial, commercial and social life such that its welfare is inextricably bound up with the economic well being of the United States. Business men have begun to look upon it as a barometer of general business conditions. When the automobile industry prospers they feel that the industrial and commercial activity of our country as a whole should prosper, and when the automobile industry suffers a slackening in its activity, general business likewise becomes dull.

Comparison of the figures on automobile production over a period of years with indexes of general business conditions, stated Mr. Pearson, reveals that the rises and declines in automobile output coincide with the fluctuations of general business. Which is the cause and which the effect has not been definitely established but undoubtedly each influences the other. More automobiles are produced and sold when business conditions are good. On the other hand, business may be generally better because the automobile industry is active. Some writers have claimed the prosperity in the United States during the last five or six years has been due almost entirely to the great activity in the automobile industry.

The trend of automobile production in 1928 will reverse that of 1927, declared the speaker. 1927 began fairly high and then declined toward the end of the year. 1928 will begin relatively low and increase its trend as 1928 advances. The output for the entire industry in the first quarter will be less than the first quarter 1927. The second quarter this year will equal or perhaps slightly exceed the second quarter of 1927. The last half of 1928 will surpass the corresponding period of the preceding year with an increase of over 100 per cent in the last quarter.

In conclusion, Mr. Pearson expressed the opinion that the expected increase of activity in the automobile industry during 1928 should have a stimulating effect on business in general in view of the fact that its influences are widespread, purchasing materials and giving employment to workers on a large scale. It should help make 1928 a prosperous year—better than 1927. The paper industry should share this improvement.

J. A. Kavanagh, statistician for the American Paper and Pulp Association said the situation in the paper industry should parallel that in the automobile industry. He pointed out that the paper industry has not exploited the domestic and foreign markets as the automobile industry has done, and that under the Webb-Pomerene act our nation's tariff policy is aggressive for the development of foreign trade, not merely protective against foreign competition. This should enable the paper industry to develop to a degree not yet known.

The following officers were elected for 1928-1929:

President, James H. Coy, Chicago, Flambeau Paper Company.

Vice-Presidents—New England Division—Thomas Compton Walsh, Boston, Hollingsworth & Vose Company; New York Division—Samuel C. Knode, New York, Albemarle Paper Manufacturing Company; Miami Valley Division—R. T. Houk, Jr., Dayton, Ohio, The G. H. Mead Company; Chicago Division—Harold R. Knott, Chicago, Eastern Manufacturing Company.

Chairman Membership Committee, Walter E. Perry, Holyoke, Chemical Paper Manufacturing Company and Crocker-McElwain Company.

Chairman Educational Committee, F. W. Main, Mittineague, Worthy Paper Company.

Chairman Social Committee, R. D. W. Ewing, New York, American Writing Paper Company.

Secretary-Treasurer, D. A. Crocker, 18 East 41st street, New York.

COST ASSOCIATION MEETINGS

Exceptional interest was shown in the twentieth semi-annual meeting of the Cost Association of the Paper Industry, held at the Waldorf-Astoria Hotel on Wednesday and Thursday.

On Wednesday the proceedings were opened by President Ralph B. Knott whose "Address of Welcome" was timely and to the point. Thomas J. Burke, the indefatigable secretary, presented a

"Wage Survey" report and led a discussion on "Labor Turnover in the Pulp and Paper Industry."

T. D. Nevins, vice-president of Miller, Franklin & Bassett, Inc., New York, gave a thorough and comprehensive discourse on "The Distribution of Selling Expenses" which was followed by an interesting discussion. At 1 p. m. a luncheon meeting was held, an account of which appears on another page of this issue.

The only speaker at the afternoon session was Reginald Trautschold, consulting engineer and editor of the Power Plant Section of the PAPER TRADE JOURNAL. Mr. Trautschold's subject was "Cost Reduction in the Power Plant." He described the power plant as a complex unit and analyzed the interest which extends to efficiency in power utilization, citing a typical example. He explained the aim of the Power Plant Section of the PAPER TRADE JOURNAL, and showed the mutual interests of manufacturers and users of power plant equipment. Mr. Trautschold cited several examples of statistics compiled on the conduct of the section. Instrument Control in Cost Cutting was illustrated by reference to these examples.

Mr. Trautschold compared the use of instruments by the management to the use of machinery by the operatives, drawing deductions to emphasize the importance of instrument control in managerical direction of industry. He also explained the valuation of intangible benefits and cited examples of ignorance.

Mr. Trautschold concluded his address by presenting examples of the partial accounting of improvements realized by instrument control which are of considerable value, citing examples in several paper mills.

At the morning session on Thursday, C. M. Baker, engineer of the American Paper and Pulp Association, spoke on "Cost Reduction by Waste Utilization," while J. A. Grimes, special representative of the Treasury Department, Washington, D. C., gave an interesting address on "The Government Plan for Standardizing Depreciation Rates in the Pulp and Paper Industry."

In the afternoon, Dr. E. O. Merchant, Statistician of the Canadian News Print Company, Ltd., gave a valuable talk on "The Business Outlook and Its Bearing on Sales Estimates and Budgets." One of the most interesting conventions of the Cost Association was closed by a speech by Arthur R. Burnet, statistician, the subject of which was "Cost Reduction by Waste Utilization."

TISSUE PAPER ASSOCIATION

The annual meeting and election of officers of the Tissue Paper Manufacturers Association was held Tuesday morning, the following officers being elected for the ensuing year: President, L. W. Ranck, Crystal Tissue Company; Vice President, J. M. Conway, Hoberg Paper and Fibre Company; Vice President, John M. Rieg, Erving Paper Company; Secretary-Treasurer, E. H. Naylor.

Executive Committee: L. W. Ranck, Crystal Tissue Company; J. M. Conway, Hoberg Paper and Fibre Company; John M. Rieg, Erving Paper Company; E. H. Benson, Regal Paper Company; E. J. Kiefer, Port Huron Sulphite and Paper Company.

There was an unusually good attendance and many matters of importance to this branch of the industry were discussed, including prevalent conditions as well as future prospects in the tissue paper market.

WAXED PAPER ASSOCIATION

The annual meeting of the American Waxed Paper Association was held on Wednesday and Thursday at the Waldorf-Astoria, with a full attendance present, for the discussions of their usual trade problems. The election of officers took place at Thursday's session, when the following were elected: President, R. A. Donnelley, Central Waxed Paper Company; Vice-President, A. Havemeyer, Package Paper Company; Vice-President, C. Wright, Waterproof Paper & Board Company. Executive Committee: W. L. Carter, Nashua Gummed Coated Paper Company; R. A. Hayward, Kalamazoo Vegetable Parchment Company; W. J. Eisner, Newark Paraffine & Parchment Company.

SOUTHERN KRAFT ASSOCIATION

There was a satisfactory attendance at the meetings of the Southern Kraft Association, held on Monday and Wednesday afternoons and numerous matters of interest to the makers of Southern kraft were freely discussed. The following officers were elected: President, A. C. Goodyear, president of the Bogalusa Paper Company, Bogalusa, La.; vice president, P. M. Tallon, secretary-treasurer of the Hummel-Ross Fibre Corporation, Hopewell, Va.; secretary-treasurer, C. E. Dobson, 1007 New Orleans Bank Building, New Orleans, La.

GUMMED TAPE MANUFACTURERS

At their annual meeting at the Waldorf-Astoria on Thursday, the following officers were elected by the Gummed Tape Manufacturers Association for 1928-1929:

President, Irving McHenry, Mid-States Gummed Paper Company, Chicago, Ill.

Vice-president, E. C. Smith, Nashua Gummed and Coated Paper Company, Nashua, N. H.

Secretary-treasurer, O. M. Porter, 18 East 41st Street, New York.

Executive Committee:—The above and L. A. Bassett, McLaurin-Jones Company, Holliston, Mass.; W. K. Gerbrick, Central Paper Company, Menasha, Wis.; W. A. Wylde, Liberty Paper Company, Bellows Falls, Vt.

U. S. PULP PRODUCERS ASSOCIATION

At the annual meeting of the United States Pulp Producers Association held at the Waldorf-Astoria on Thursday afternoon, the following officers were elected:

President—W. H. Savery, Shenandoah Pulp Company, Harpers Ferry, Va.

Vice-President—N. S. Stone, Wausau Sulphate Fibre Company, Mosinee, Wis.

Secretary-Treasurer—O. M. Porter, New York.

Executive Committee: J. P. Hummel, Hopewell, Va.; Norman W. Wilson, Erie, Pa., and J. M. Ward, Detroit, Mich.

WRITING PAPER ASSOCIATION

The annual meeting and election of officers of the Writing Paper Manufacturers Association took place on Wednesday morning, with the following officers being elected for 1928: President, D. K. Brown, Neenah Paper Company, Neenah, Wis.; vice president, B. A. Franklin, Strathmore Paper Company; vice president, F. A. Leahy, Eastern Mfg. Co.

Executive Committee: L. C. Anderson, W. B. Oglesby Paper Company; I. N. Esleeck, Esleeck Mfg. Company; E. P. Bagg, Parsons Paper Company; C. B. Clark, Riverside Fibre and Paper Company.

COVER PAPER MANUFACTURERS

The annual meeting of the Cover Paper Manufacturers Association was held on Tuesday afternoon, at which the following officers were elected for the ensuing year: President, Minor M. Beckett, Beckett Paper Company; vice president, Col. B. A. Franklin, Strathmore Paper Company; secretary-treasurer, E. H. Naylor, Springfield, Mass.

Executive Committee: Minor M. Beckett, Col. B. A. Franklin, Willis H. Howes, Knowlton Bros., Inc.

BRISTOL BOARD MANUFACTURERS

The Bristol Board Manufacturers, with N. W. Harrower acting as chairman, held an informal conference on Tuesday morning. The meeting drew a good attendance and the discussions regarding trade problems proved very interesting to the manufacturers present. The Bristol Board Manufacturers have no regular association, but nevertheless constitute a rather important branch of the paper industry.

WRAPPING PAPER MANUFACTURERS

Conferences of members of the Wrapping Paper Manufacturers Service Bureau were held Thursday morning and afternoon in the tea room of the Waldorf-Astoria. The schedule of topics to be discussed proved quite interesting to the members and there was the usual general discussion covering trade statistics and vital business matters were thoroughly covered.

CARDBOARD ASSOCIATION

The cardboard Manufacturers Association held its annual conference on Wednesday morning at the Waldorf-Astoria. From the attendance, this branch of the industry was well represented. At the meeting trade matters of importance were considered, in relation to the present market.

CONVERTING MILLS ASSOCIATION

The Converting Mills Association met on Thursday morning for the discussion of the usual trade problems, and various subjects pertinent to the Association were gone into. There was a good attendance.

TOILET PAPER CONVERTERS

The Napkin and Toilet Paper Divisions of the Tissue Paper Manufacturers Association met on Tuesday afternoon for the purpose of discussing problems pertinent to the converters. The meeting was well attended.

FINE AND SULPHITE BOND DIVISIONS

The Fine Paper and Sulphite Bond Divisions of the Writing Paper Manufacturers Association held separate conferences on Tuesday afternoon. These meetings were presided over by the vice presidents from the regular association. The meetings were very well attended and the usual problems pertaining to the several distinctive grades of paper were gone into very thoroughly.

SHEET TISSUE DIVISION

The Sheet and Kraft Tissue Divisions of the Tissue Paper Manufacturers Association held a meeting Tuesday afternoon, at which many topics having a special bearing on these particular grades of tissue paper were discussed with beneficial results to the manufacturers present.

CLOTH TAPE MANUFACTURERS

The Cloth Tape Division of the National Association of Gummed Tape Manufacturers held an interesting session in the Waldorf-Astoria Hotel on Wednesday afternoon, at which many vital matters pertaining to the industry were discussed.

PULP AND PAPER MAKING FILM

By courtesy of the Oxford Paper Company an interesting and instructive moving picture, "Pulp and Paper Making" was shown in the Myrtle Room of the Waldorf-Astoria on Thursday afternoon.

Those Who Attended the Convention

Official Registration of the American Paper and Pulp Association

A

Abrams, Allen, Marathon Paper Mills Co., Rothschild, Wis.
Adams, Robert, Amthor Testing Instrument Co.
Adie, John, Taylor-Logan Co., Papermakers, Holyoke, Mass.
Alden, Chester W., Oxford Paper Co. and Nashwaak Pulp & Paper Co.
Alden, G. R., Dennison Mfg. Co., Framingham, Mass.
Allen, T. M., Peshtigo Paper Co., Peshtigo, Wis.
Allison, R. L., U. S. Envelope Co.
Amthor, F. E., Amthor Instrument Co.
Andrews, C. K., Itasca Paper Co., Grand Rapids, Minn.
Andrews, H. J., Shartle Bros. Machine Co., Middletown, Ohio.
Arnot, W. D., Newton Falls Paper Co., Newton Falls, Mass.
Atwater, J. R., New York State College of Forestry, Syracuse, N. Y.
Augsbury, F. A., Algonquin Paper Corp.
Austin, Edward H., Bulkley, Dunton Co.

B

Babbitt, Ben. J., Brown Co.
Bacon, C. B., Write, Inc.
Bagg, Edward P., Parsons Paper Co., Holyoke, Mass.
Bagg, J. L., Millers Falls Paper Co., Millers Falls, Mass.
Baker, C. M., American Paper and Pulp Association.
Baker, Hugh P., Trade Association Dept., Chamber of Commerce.
Baker, R. R., Westinghouse Electric & Mfg. Co.
Baker, W. E. B., Continental Paper & Bag Mills Corp.
Baker, W. Noyes, International Paper Co.
Baldwin, H. R., Hammermill Paper Co.
Barba, M. B., Leeds & Northrup Paper Co.
Bardeen, Norman, Lee Paper Co., Vicksburg, Mich.
Baron, J. V., Sherman Paper Co.
Barrett, James E., American Writing Paper Co.
Barstow, F. L., U. S. Rubber Co.
Bassett, L. A., McLaurin-Jones Co.
Bates, J. S., Price Bros. & Co., Ltd.
Batzle, P. C., Martin Cantine Co.
Bearce, G. D., International Paper Co.
Becker, F. K., Bird Machine Co., South Walpole, Mass.
Bennett, H., Valley Iron Works Co.
Benson, Earl H., Regal Paper Co.
Bentzen, Dr. T. C., Whiting-Plover Paper Co., Stevens Point, Wis.
Berger, H. K., G. D. Jenssen Co., New York.
Bergholtz, E. A., American Telephone & Telegraph Co.
Bertz, E. C., Consolidated Paper Co.
Beveridge, J. Brookes, Bonaventure Pulp & Paper Co., Chandler, Que.
Bing, H. O., Paper & Textile Machinery Co., Sandusky, Ohio.
Black, Charles F., Penberthy Injector Co.
Black, Ward E., Hoberg Paper & Fibre Co., Green Bay, Wis.
Blanchard, Gordon, Crocker-McElwain Co., Holyoke, Mass.
Blanco, G. W., Dupont Rayon Co.
Bliss, Gorham, Worthy Paper Co., New York.
Booth, L. M., Booth Chemical Co
Bosworth, Ralph L., Crocker-McElwain Co., Holyoke, Mass.
Bowne, T. C., Strathmore Paper Co., Mittineague, Mass.
Boyce, D. H., New York State College of Forestry.
Boyd, Chas. S., Appleton Coated Paper Co.
Bragg, F. E., Orono Pulp & Paper Co., Orono, Me.
Brainerd, F. W., Dill & Collins Co., Philadelphia.
Brayton, S. C., Itasca Paper Co., Grand Rapids, Minn.
Bray, Paul, University of Maine, Orono, Me.
Brazeau, G. S., Appleton Machine Co., Appleton, Wis.
Bromley, Wm. F., Hammermill Paper Co., Erie, Pa.
Brooks, A. M., Rafford Co. of America.
Brown, Allen, Rhinelander Paper Co., Rhinelander, Wis.
Brown, D. K., Neenah Paper Co., Neenah, Wis.
Brown, H. H., Jackson Heights, N. Y.
Bruce, Donald, Mason & Stevens.
Brust, Wm. T., Hammermill Paper Co., Erie, Pa.
Bryant, Edward S.
Bryant, G. G., Alberene Stone Co., New York.
Buhrer, R. A., Union Waxed & Tissue Paper Co.
Bullard, J. G., Warren Mfg. Co., Riegelsville, N. J.
Bullis, E. G., Oswego Falls Corp.
Bullock, W. B., Import Committee, New York.
Burkhardt, F. T., Keith Paper Co.
Burke, T. J., Cost Association of Paper Industry.
Burrows, A. A., Burrows Paper Corp., Little Falls, N. Y.
Bush, A. A., E. G. Jones & Sons Co.
Bush, S. L., Crocker-McElwain Co.
Buskirk, C. A., Michigan Paper Co., Plainwell, Mich.
Buxton, W. H., Philadelphia Quartz Co.
Byron, Stanley, Hammermill Paper Co., Erie, Pa.

C

Cable, D. E., Oxford Paper Co.
Cadwell, Geo. J., American Writing Paper Co.
Calkins, Geo. L., Keyes Fibre Co.
Cameron, J. A., Cameron Machine Co., Brooklyn, N. Y.
Cantine, H. R., Martin Cantine Co., New York.
Carlin, T. J., Advance Bag & Paper Co.
Carney, Wm. M., Scott Paper Co., Chester, Pa.
Carpenter, J. A., Kansas City Paper House, Kansas City, Mo.
Carr, P. W., National Aniline & Chemical Co., New York.
Carson, F. T., Bureau of Standards, Washington.
Carter, W. L., Nashua Gummed & Coated Paper Co.
Case, V. B., Paper Makers Importing Co.
Casey, Howard A., Hampshire Paper Co., South Hadley Falls, Mass.
Catlin, Edgar S., Pejepscot Paper Co.
Caust, M. L., Beaver Products Co.
Chabot, C. W., Hammermill Paper Co.
Chalon, O. T., General Dyestuffs Corp.
Chapin, R. F., Millers Falls Paper Co., Millers Falls, Mass.
Chapin, R. I., American Writing Paper Co.
Chaplin, M. P., Keyes Fibre Co.
Charron, R. C., U. S. Envelope Co.
Chatain, H. G., Hammermill Paper Co.
Chidester, G. H., Forest Products Laboratory.
Claflin, L. I., Erving Paper Mills.
Clark, A. B., J. O. Ross Engineering Corp., New York.
Clark, C. B., Riverside Fibre & Paper Co., Appleton, Wis.
Clark, F. C., South Manchester, Conn.
Clark, J. B., McDowell Paper Mills, Manayunk.
Cline, Max, International Paper Co.
Codwise, P. W., Beaver Products Co.
Coffin, A. D., C. H. Dexter & Sons, Windsor Locks, Conn.
Coffin, Dexter D., C. H. Dexter & Sons, Windsor Locks, Conn.
Coggeshall, G. W., S. D. Warren Co.
Coker, C. W., Sonoco Products Co., Hartsville, S. C.
Colby, Forrest H., S. D. Warren Co.
Condon, Lewis Td., Continental Paper & Bag Mills Corp.
Conway, Joseph M., Hoberg Paper & Fibre Co., Green Bay, Wis.
Cook, O. L., Lehigh Lime Co.
Cook, T. A., West Virginia Pulp & Paper Co.
Cooley, C. H., Taylor-Logan Papermakers Co.; Advertisers Paper Mills.
Coolidge, P. T., Consulting Engineer.
Cornell, John, Paper Mill.
Corsaut, John D., Klipto Loose Leaf Co.
Cosby, A. F., American Writing Paper Co.
Cowie, J. B., Orono Pulp & Paper Co., Orono, Me.
Cowles, E. B., American Engineering Co., New York.
Cowling, E. M., Hawthorne Paper Co., Kalamazoo, Mich.
Cox, Walter J., Paterson Parchment Paper Co., Paterson, N. J.
Coy, J. H., Flambeau Paper Co., Park Falls, Wis.
Crabtree, H., Adams Paper Co., Wells River, Vt.
Crafts, Geo. A., Orono Pulp & Paper Co., Orono, Me.
Crafts, Geo. E., Orono Pulp & Paper Co., Orono, Me.
Craig, Robert Jr., University of Michigan, School of Forestry.

Crocker, C. A., Crocker-McElwain Co., Holyoke, Mass.
Cronkhite, W. W., General Electric Co.
Crossley, T. Lindsey, Industrial Laboratories, Ltd.
Crouse, L. W., Bennett, Ltd.
Croy, Leo E., Menasha Printing & Carton Co., Menasha, Wis.
Cuddeback, F. E., General Electric Co.
Cummings, Fred A., U. S. Envelope Co.
Curran, C. E., Forest Products Laboratory, Madison, Wis.
Curtis, F. A., American Writing Paper Co.
Curtis, F. J., Merrimac Chemical Co.
Cuskey, John V., Individual Dixies.

D

Dahl, E., Groff Paper Co.
Daley, W. C., Port Huron Sulphite & Paper Co., Port Huron, Mich.
Dauman, Samuel, M. Gottesman & Co., New York.
Davis, John F., Frank H. Davis Co., Cambridge, Mass.
Davis, M. M., Hammermill Paper Co., Erie, Pa.
Davis, M. W., Anglo-Canadian Pulp & Paper Co.
Davis, S. R., Dells Paper & Pulp Co., Eau Claire, Wis.
DeCew, J. A., Process Engineers, Inc.
Denison, V. S., Paper & Textile Machinery, Sandusky, Ohio.
Dennett, Phillips, Bird Machine Co., South Walpole, Mass.
Dewey, Wm. F., National Cellulose Corp.
Dial, M. G., Brownville Board Co.
Dieffenderfer, J. C., Paper Makers Chemical Co.
Diggs, John R., Albemarle Paper Mfg. Co., Richmond, Va.
Dinkelspiel, M. L., National Paper Products Co., New York.
Dobrow, M. C., Writing Paper Manufacturers Association.
Dobson, C. E., Southern Kraft Manufacturers Association.
Donovan, F. E., United Paper Co.
Donnelley, R. R., Central Waxed Paper Co.
Doye, Marius, Montreal, Que.
Drewson, Pierre, Barrett Co.
Dufford, J. R., Paterson Parchment Paper Co.
Dunbar, E. S., Chemical Paper Mfg. Co., Holyoke, Mass.
Dunbar, T. L., Can. Stebbins Engineering & Mfg. Co.
Dunn, Theo. W., Dunn Sulphite Paper Co., Port Huron, Mich.

E

Eastland, F. G., Underwood Paper Mills, Plattsburg, N. Y.
Eastman, H. M., Paper Makers Chemical Co.
Eastwood, G. A., Parsons Paper Co., Holyoke, Mass.
Eddy, E. B., National Paper Products Co.
Edmonds, F. J., Wausau Paper Mills Co., Brokaw, Wis.
Edmonds, W. L., Wausau Paper Mills Co., Brokaw, Wis.
Ekholm, Ivar, National Aniline & Chemical Co.
Eliason, H. D., Central Paper Co., Muskegon, Mich.
Ellerson, H. W. Albemarle Paper Mfg. Co., Richmond, Va.
Eminger, R. L., American Pulp & Paper Mills Superintendents Association.
Enderlein, G. F., Wausau Sulphate Fibre Co., Mosinee, Wis.
Eshelman, C. M., Cameron Machine Co., Brooklyn, N. Y.
Esleeck, Irving N., Esleeck Mfg. Co., Turners Falls, Mass.
Engler, W. N., Western Union Tel.
Evans, W. F., Nashua Gummed & Coated Paper Co.
Everest, D. C., Marathon Paper Mills, Rothschild, Wis.

F

Fairbanks, S. C., Hamersley Mfg. Co., Garfield, N. J.
Fay, A. F., Parker-Young Co.
Fealy, Nelson, Strathmore Paper Co., Mittineague, Mass.
Fenner, J. T., A. M. Collins Mfg. Co.
Fischer, W. M., Curtis & Bro., Newark, Del.
Fisher, F. L., Central States Envelope Co.
Fiske, Paul S., Parker-Young Co.
Fitzgerald, E. J., Scott Paper Co.
Fletcher, S. W., J. O. Ross Engineering Corp.
Ford, W. B., American Glue Co.
Fowler, Ralph F., Hampden Glazed Paper & Card Co.
Fowler, W. S., Hampden Glazed Paper & Card Co.
Fox, C. A., Bryant Paper Co., Kalamazoo, Mich.
Foxgrover, James A., Western Paper Makers Chemical Co.
Fleming, W. H., W. Wroe & Co.
Fowler, Norman N., Hampden Glazed Paper & Card Co.
Frampton, A. E., Hammermill Paper Co., Erie, Pa.
Franklin, B. A., Strathmore Paper Co., Mittineague, Mass.
Frisby, I. N., Nekoosa-Edwards Paper Co., Port Edwards, Wis.
Fritz, E. B., Paper Industry, Chicago.
Fullerton, K. B., Jr., Manufacturers Paper Co.
Fulton, W. B., Fulton Engineering Co., Middletown, Ohio.

G

Gardner, G. A., M. Gottesman & Co., New York.
Gardner, Geo. H., Menasha Printing & Carton Co., Menasha, Wis.
Gautier, L. R., Nashua Gummed & Coated Paper Co.
Geist, Walter, Allis-Chalmers Mfg. Co.
Genberg, G. P., Fraser Co., Ltd.
Gephart, O. P., Oxford Miami Paper Co., West Carrollton, Ohio.
Gerpheide, G. H., Hawthorne Paper Co., Kalamazoo, Mich.
Gibson, G. K., Wausau Sulphate Fibre Co., Chicago.
Gilkey, G. W., Michigan Paper Co., Plainwell, Mich.
Gillette, H. R., Gillette Fibre Mills, Stillwater, N. Y.
Glatfelter, P. H., P. H. Glatfelter Co., Spring Grove, Pa.
Glessner, M. F., Paterson Parchment Paper Co.
Goeppinger, C. J., Waterbury Tool Co.
Goldsmith, W. F., Arthur D. Little Co., Cambridge, Mass.
Gooding, P., Strathmore Paper Co.
Goodrich, A. B., Riverside Paper Mfg. Co.
Goodsir, Geo., Mid-States Gummed Paper Co.
Gordon, C. I., Groveton Paper Co.
Gordon, H. B., U. S. Testing Laboratories.
Gordon, H. W., U. S. Envelope Co.
Gordon, I., New York.
Gormley, R. A., United Paper Board Co.
Greene, H. B., Niagara Paper Mills, Lockport, N. Y.
Greenwood, F. E., Deerfield Glassine Co.
Griswold, H. H., C. H. Dexter & Sons, Windsor Locks, Conn.
Gruwald, F. B., Container Corp.
Guise, C. H., State College of Forestry, Cornell University.

H

Hall, Edward L., U. S. Envelope Co.
Ham, E. G., John A. Manning Paper Co., Troy, N. Y.
Hammarlund, H., Hamersley Mfg. Co.
Hans, Thomas, Container Corp.
Hansen, Walter G., Fort Howard Paper Co., Green Bay, Wis.
Harper, R. O., B. D. Rising Paper Co., Housatonic, Mass.
Harrigan, H. R., District of Columbia Paper Mfg. Co.
Harrison, H. H., Crystal Tissue Co., Middletown, Ohio.
Hart, John M., Keyes Fibre Co.
Hartley, M. T., Paul A. Sorg Paper Co., Middletown, Ohio.
Harvey, G. S., Oxford Paper Co.
Haskell, J. D., Dilts Machine Works.
Hastings, Arthur C., Cliff Paper Co., Niagara Falls, N. Y.
Hatch, R. S., United Filters Co., New York.
Havaay, Stephen, Continental Paper & Bag Mills Corp.
Hayes, N. O., U. S. Envelope Co.
Haynes, E. A., Port Huron Sulphite & Paper Co., Port Huron, Mich.
Hayward, L. F., Fox River Paper Co.
Hayward, R. A., Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Hazelwood, J. H., Barber Asphalt Co.
Heath, W. L., Bulkley, Dunton Co.
Heck, J. F., Brown Co.
Helffrich, A. B., Orono Pulp & Paper Co.
Hellstrom, G. L. M., Paper Machinery, Ltd.
Hendricks, C. J., Consolidated Water Power & Paper Co.
Heritage, C. C., Forest Products Laboratory, Madison, Wis.
Herrick, F. C., Mountain Mill Paper Co., Lee, Mass.
Hersey, Ralph B., Hollingsworth & Vose Co.
Herson, G. H., Ajax Paper Mills.
Heuser, Dr. E., International Paper Co.
Heustis, Chas. S., U. S. Testing Co., New York.
Hibbard, R. S., B. D. Rising Paper Co.
Hill, R. P., Pulp Bleaching Corp.
Hilkson, J. R., Hampden Glazed Paper & Card Co.
Hinds, A. K., Carthage Machine Co.
Hisey, W. O., Oxford Paper Co., New York.
Hobson, J. L., St. Croix Paper Co.
Hodges, W. S., Appleton Wire Works, Appleton, Wis.
Hoenstine, Roland, York, Pa.
Hoffman, Dr. W. F., North West Paper Co.
Holmes, G. S., Brown Paper Mills Co., West Monroe, La.
Holmes, Jos. E., Crocker-McElwain Co., Holyoke, Mass.
Homer, Ray, Scott Paper Co.
Hood, James J., A. M. Collins Mfg. Co.
Hooker, A. H., Sr., Hooker Electrochemical Co.
Hooker, R. W., Hooker Electrochemical Co.
Hopper, B., Hopper Paper Co., Taylorville, Ill.
Houck, Geo. W., Wrenn Paper Co., Middletown, Ohio.
Housen, Morris, Erving Paper Mills, Erving, Mass.
Howe, Wm. W., Z. & W. M. Crane Co.
Howell, C. M., Scott Paper Co.
Howell, W. H., Rumford Paper Mills, Inc.
Howes, Willis H., Knowlton Bros., Watertown, N. Y.
Hughes, Ebbert M., Strathmore Paper Co., Mittineague, Mass.
Hulett, Lee H., Chemical Paper Mfg. Co.
Hummel, J. P., Hummel-Ross Fibre Corp., Hopewell, Va.
Hurtubis, C. R., Hammermill Paper Co.

I

Ireland, T. H., Crane Co.

J

Jackson, Andrew, American Writing Paper Co.
Joachim, Dr. H. L., Central Paper Co.
Jobson, C. A., New York & Pennsylvania Co.
Johnson, W. O., Strathmore Paper Co.
Johnson, Warren S., Curtis Bros. Co.
Johnstone, E. J., Paper Makers Chemical Co.
Jones, Arthur L. Holyoke Card & Paper Co.
Jones, E. W., John A., Manning Paper Co.

K

Kallender, E. L., Dennison Mfg. Co., Framingham, Mass.
Karges, John, C. H. Dexter & Sons.
Keay, H. O., Laurentide Co., Ltd.
Keenan, T. J., Paper Industry.
Keesey, Horace, Schmidt & Ault Paper Co., York, Pa.
Kelleter, Paul D., N. Y. State College of Forestry.
Kellogg, R. S., News Print Service Bureau, New York.
Kennedy, A. J., Hudson Falls, N. Y.
Kennedy, G. F., Hercules Powder Co.
Kennedy, John P., American Writing Paper Co.
Kent, C. H., E. K. Mansfield Co.
Kern, Conrad J., Moore & White Co., Philadelphia, Pa.
Kiefer, Francis, Canada Forwarding Co.
Kiely, Helen U., American Writing Paper Co.
Kimball, D. B., Bird & Son.
Kindleberger, J. Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
King, Alfred H., Crocker-McElwain Co.
King, Kenneth T., Dupont. Co., Chicago.
Kinney, C. E., Hercules Powder Co.
Kirsh, A. J., Bedford Pulp & Paper Co.
Klein, A. F., Hammermill Paper Co.
Klund, F. P., Hammermill Paper Co.
Knight, H. W., Bulkley, Dunton Co.
Knode, S. C., Albemarle Paper Mfg. Co., Richmond, Va.
Knott, R. B., Eastern Mfg. Co.
Koenig, Paul, Continental Paper & Bag Mills Corp.
Koroleff, A., Canadian Pulp & Paper Association.
Krebs, Frank J., Hamersley Mfg. Co.
Krimmel, M. A., Hammermill Paper Co.
Krudner, R. E., Lagerloef Trading Co., New York.
Krueger, Theodore, Better Packages, Inc.
Kumler, R. W., Bennett, Ltd.
Kutter, H. L., Black-Clawson Co.

L

Ladd, F. C., Byron Weston Co., Dalton, Mass.
Laftman, R. H., Bogalusa Paper Co., Bogalusa, La.
Lake, D., Paper & Textile Machinery Co.
Lamb, E. L., New York State College of Forestry.
Lander, H. R., Hammermill Paper Co.
Langtrey, W. W., District of Columbia Paper Mfg. Co.
Larson, Lewis, Sioux Falls Paper Co.
Lehr, L. F., Malone Paper Co., Malone, N. Y.
Leeper, R. W., Can. General Electric Co.
Leonard, Frederick S., Fisk Paper Co.
Lerch, Edmond, Continental Paper & Bag Mills Corp.
Leslie, D. S., Fox River Paper Co.
Levy, Arthur, Bedford Pulp & Paper Co.
Libby, C. E., New York State College of Forestry.
Liebeck, H., Scott Paper Co., Chester, Pa.
Lindquist, H. E., Missisquoi Pulp & Paper Co., Sheldon Springs, Vt.
Little, J. S., Western Electric Co.
Livy, E. C., Wortendyke Mfg. Co., Richmond, Va.
Lockey, H. H., B. D. Rising Paper Co.
Lodge, Wm. C., Oswego Falls Corp.
Long, A. C., Jr., Bogalusa Paper Co., Bogalusa, La.
Love, R. A., Nekoosa-Edwards Paper Co.
Lowe, Donald V., Lowe Paper Co., Ridgefield, N. J.
Lowe, Jos. A., Falulah Paper Co., Fitchburg, Mass.
Lowe, M. B., Lowe Paper Co., Ridgefield, N. J.
Lowe, E. R., Beaver Products Co., New York.
Lucey, W. S., Hammermill Paper Co.
Ludwig, W. C., Mead Pulp & Paper Co.
Lundbeck, Ivar, Lee Paper Co., Vicksburg, Mich.
Lutz, A. Geo., Lutz Paper Co.
Lyman, E. R., Missisquoi Pulp & Paper Co., Sheldon Springs, Vt.

M

Macdonald, C. R., Consolidated Paper Co.
Macdonald, R. G., (Technical Association of the Pulp & Paper Industry.
Macklem, G. A., Beloit Iron Works, Beloit, Wis.
Macklem, Wm. W., Black-Clawson & Co.
MacNaughton, W. G., News Print Service Bureau, New York.
Magnus, Carl, Standard Paper Mfg. Co., West Point, Va.
Main, F. W., Worthy Paper Co., Mittineague, Mass.

Mair, Ralph, Dill & Collins Co.
Mansfield, E. K., E. K. Mansfield Co.
Marburg, L. C., Marburg Bros.
Marcuse, M. E., Bedford Pulp & Paper Co., Richmond, Va.
Marston, W. B., Keith Paper Co., Turners Falls, Mass.
Martin, Geo., Scott Paper Co.
Martin, H. W., Martin Pulp & Paper Co.
Martin, Hoke, Mathieson Alkali Works.
Martindale, H. D., Shartle Bros. Machine Co.
Mason, H. B., Bird & Son.
Mason, J. G., Jr., Edgar Bros. Co.
Matthews, D. M., University of Michigan, School of Forestry.
Maughn, Wm., N. Y. State College of Forestry, Syracuse, N. Y.
Maull, W. R., Dill & Collins Co.
May, Fred E., Strathmore Paper Co.
McBain, B. T., Portland, Ore.
McCaskey, R. C., Coated Paper Products.
McClellan, W. S., P. H. Glatfelter Co., Spring Grove, Pa.
McCombs, M. F., Electro Bleaching Gas Co., New York.
McDaniel, H. C., Waldorf Paper Products Co., St. Paul, Minn.
McDowell, Charles, McDowell Paper Mills, Manayunk.
McDowell, J. N., Carew Mfg. Co., South Hadley Falls, Mass.
McDowell, H. G., Pusey & Jones Corp.
McEwan, John, American Tissue Mills.
McGilpin, Wm. A., Strathmore Paper Co.
McGrath, Louise E., Booth Chemical Co.
McHenry, Irving, Mid-States Gummed Paper Co.
McKee, Ralph H., Columbia University.
McKuffee, C. H., Claremont Paper Co.
McLaurin, Wm., McLaurin-Jones Co.
McNaughton, G. C., Mead Fibre Co.
MacNeille, M. B., Fairbanks, Morse & Co.
McNicoll, F., Racquette River Paper Co., Potsdam, N. Y.
Megargee, G., Paterson Parchment Paper Co.
Meighan, M. R., Abitibi Power & Paper Co.
Melker, A. R., New York.
Merlin, C. W., Groveton Paper Co.
Merrill, A. D., Stebbins Engineering & Mfg. Co.
Merrill, C. H., McLaurin-Jones Co., Brookfield, Mass.
Meyer, W. J., Brown Paper Mill Co., West Monroe, La.
Millar, R. N., Ruths Accumulator Co.
Miller, J. D., York Haven Paper Co., York Haven, Pa.
Miller, K. F., Keith Paper Co., Turners Falls, Mass.
Miller, R. N., Appleton, Wis.
Mills, O. J., Sandy Hill Iron & Brass Works.
Millspaugh, W. H., Paper & Textile Machinery Co.
Minor, Jessie E., Collins Mfg. Co., Holyoke, Mass.
Minton, Ogden, Minton Vacuum Dryer Corp.
Monsson, W. H., Forest Products Laboratory.
Montabone, A. J. F., Consulting Engineer.
Moore, Arthur W., Shawmuth Waxed Paper Co.
Moore, Geo. E.
Moore, W. F., New York State College of Forestry.
More, Geo. W., Geo. W. Millar & Co.
Morgan, H. W., New York State College of Forestry, Syracuse, N. Y.
Morian, C. H., Cherry River Paper Co.
Morrison, H. A., Oliver Continuous Filter Co.
Motschman, F. W.
Moyer, J. W., Moyer & Pratt, Inc., Lyons Falls, N. Y.
Moyer, M. E., West Carrollton Parchment Co.
Munro, W. A., Munising Paper Co.
Murphy, Wm. M., Underwood Paper Mills, Plattsburg, N. Y.
Murray, D. E., New York State College of Forestry.
Myers, E. H., Waldorf Paper Products Co., St. Paul, Minn.

N

Naegeli, Fred, Atterbury Bros., New York.
Nash, James B., Nekoosa-Edwards Paper Co., Port Edwards, Wis.
Nash, R. A., Menasha Printing & Carton Co., Menasha, Wis.
Naylor, E. H., Writing Paper Manufacturers Association, Springfield, Mass.
Nelson, R. F., Glassine Paper Co.
Nevius, A. H., Oxford Miami Paper Co., West Carrollton, Ohio.
Newton, N. B., Newton Paper Co.
Nicholson, G., Bogalusa Paper Co., Bogalusa, La.
Nickerson, A. W., Process Engineers, Inc.
Nivling, W. A., Huron Milling Co.
Nixon, W. L., American Writing Paper Co.
Noble, John H., Oliver Continuous Filter Co.
Nostrand, H. P. G., Saranac Pulp & Paper Co., Plattsburg, N. Y.
Norton, E. H., C. H. Norton Co.
Norton, W. J., American Writing Paper Co.
Noyes, H. G., Appleton, Wis.

O

Oberweiser, E. A., Whiting-Plover Paper Co., Stevens Point, Wis.
O'Connor, J. J., Mead Pulp & Paper Co.
Oechsle, George, Dill & Collins Co.
Olmsted, Geo., S. D. Warren Co.
Olsoon, E., Chesapeake Corp., West Point, Va.

P

Pagenstecher, Felix, Bryant Paper Co., Kalamazoo, Mich.
Partsch, F. W., J. O. Ross Engineering Corp.
Patch, Clifford, Orono Pulp & Paper Co.
Pattison, R. W., American Writing Paper Co.
Pease, R. L., Brownville Paper Co., Brownville, N. Y.
Peterson, F. C., New York State College of Forestry.
Peterson, M. F., U. S. Envelope Co.
Phipps, C. H., Watab Paper Co., Sartell, Minn.
Pierce, T. E., U. S. Envelope Co.
Porter, O. M., American Paper and Pulp Association.
Powell, J. W., Rex Paper Co., Kalamazoo, Mich.
Preston, John F., Hammermill Paper Co.
Prouty, John E., United Paper Co.
Puette, Ross, Manchester Board & Paper Co.
Purdy, H. D., Tuttle Press Co., Appleton, Wis.

Q

Quinn, R. J., Mathieson Alkali Works.
Quirk, D. L., Jr., Peninsula Paper Co., Ypsilanti, Mich.

R

Rack, H. A., Western Union.
Rafton, H. R., Raffold Co. of America.
Ramage, J. B., Franklin Paper Co., Holyoke, Mass.
Ramsey, J. B., Ramsey Paper Co.
Randall, A. T., Westinghouse Electric & Mfg. Co.
Randall, W. D., Champion Coated Paper Co., Hamilton, Ohio.
Raney, Charles E., Container Corp. of America.
Raybold, W. J., B. D. Rising Paper Co., Housatonic, Mass.
Rechnagel, A. B., Cornell University.
Reed, E. O., Government Printing Office.
Rees, E. A., F. C. Huyck & Sons.
Reese, J. Evan, Union Bag & Paper Corp.
Reilly, J. A., American Writing Paper Co.
Reynolds, I. S., Nekoosa-Edwards Paper Co., Port Edwards, Wis.
Reynolds, L. C., American Writing Paper Co.
Rhodes, Chas. F., International Paper Co.
Richardson, Grant, Hammermill Paper Co.
Richter, A. F., Stebbins Engineering & Mfg. Co.
Richter, Carl F., Superior Sizing Co., Inc.
Richter, G., Brown Co.
Rieg, J. B., Erving Paper Mills Co., Erving, Mass.
Rising, R. B., B. D. Rising Paper Co., Housatonic, Mass.
Roberts, E. B., Bemis Bro. Bag Co.
Roberts, J. R., Du Pont Co., Wilmington, Del.
Robertson, W. D., McLaurin-Jones Co., Brookfield, Mass.
Robinson, C. P., Borregaard Co.
Robinson, J. T., American Writing Paper Co.
Roe, W. O., Individual Drinking Cup Co.
Rogers, H. W., General Electric Co.
Rooney, F. J., Upson Co., Lockport, N. Y.
Roos, C. T., National Envelope Div.
Ross, Herbert H., Mid-States Gummed Paper Co.
Ross, J. O., J. O. Ross Engineering Corp.
Rothschild, H. A., Kimberly-Clark Co.
Rue, John D., Champion Fibre Co., Canton, N. C.
Russell, J. R., Marathon Paper Mills Co., Rothschild, Wis.
Russell, William G., American Writing Paper Co.
Ryland, James F., Standard Paper Mfg. Co., Richmond, Va.

S

Saecker, C. E., Appleton Machine Co., Appleton, Wis.
Sanborn, Frank A., McLaurin-Jones Co.
Sanburn, J. C., Strathmore Paper Co.
Sargent, R. E., C. H. Dexter & Sons.
Savage, R. H., Mead Pulp & Paper Co.
Savery, Thos. H., Jr., Shenandoah Pulp Co., Harper's Ferry, Va.
Savery, Wm. H., Shenandoah Pulp & Paper Co.
Sayle, W. E., National Envelope Co.
Scarth, G. W., McGill University, Montreal.
Schaffer, E. R., Forest Products Laboratory.
Schanche, H. G., Abitibi Power & Paper Co.
Schenkleberger, J. E., Safepack Mills, Millis, Mass.
Schilly, R. C., DuPont Cellophane Co.
Schmidt, J. Carl, DuPont Co., Philadelphia.
Schneider, K. W., American Coating Mills.
Schnorbach, P. P., Filer Fibre Co.
Schock, John, Newton Falls Paper Co.
Scribner, B. W., Bureau of Standards, Washington.
Scully, R. T., General Electric Co.
Seaman, Stewart E., Du Pont Rayon Co.
Seiler, Joseph L., Warren Mfg. Co.
Sellars, F. N., U. S. Envelope Co.
Shaw, M. B., Bureau of Standards, Washington.
Sheaffer, E. B., Missisquoi Pulp & Paper Co., Sheldon Springs, Vt.
Sheldon, Ben S., M. Gottesman & Co.
Shenk, Dr. M. S., American Milling Co.
Shepherd, J. B., Peninsula Paper Co., Ypsilanti, Mich.
Sherk, D. L., Oxford Paper Co.
Shoemaker, W. M., National Vulcanized Fibre Co.
Showell, E. B., Du Pont Rayon Co.
Sickman, J. F., Ontonagon Fibre Co.
Sidell, Chas. V., Hollingsworth & Vose Co.
Sigel, A. J., M. Gottesman & Co.
Simons, F. L., Rogers Fibre Co.
Simmons, R. H., Government Printing Office.
Sisson, Geo. W., Jr., Racquette River Paper Co., Potsdam, N. Y.
Sisson, Geo. W., 3rd, Racquette River Paper Co., Potsdam, N. Y.
Sisson, L. H., Racquette River Paper Co., Potsdam, N. Y.
Sisson, R. O., Jr., Racquette River Paper Co., Potsdam, N. Y.
Skinner, H. J., Skinner, Sherman & Esselen.
Smith, Carlton W., Miamisburg Paper Co.
Smith, E. C., Nashua Gummed & Coated Paper Co.
Smith, E. H., Paper Makers Importing Co.
Smith, Frederick L., New York.
Smith, H. A., Hamersley Mfg. Co.
Smith, Raymond E., Nashua Gummed & Coated Paper Co.
Smith, Richmond W., Bird Machine Co.
Southon, Alfred, Kalamazoo Vegetable Parchment Co.
Southworth, Edward, Southworth Co., Mittineague, Mass.
Spangler, Spurgeon, Schmidt & Ault Paper Co., York, Pa.
Spence, George K., New York & Pennsylvania Co., Johnsonburg, Pa.
Spickerman, C. W., Whiting-Plover Paper Co., Stevens Point, Wis.
Spierling, A. S., Hammermill Paper Co.
Springer, Roy M., Bird & Son.
Stagege, S. A., Westinghouse Elec. & Mfg. Co.
Steinmetz, J. H., Bedford Pulp & Paper Co.
Stephenson, J. N., Pulp and Paper Magazine of Canada, Gardenvale, Que.
Stephenson, J. W., Northern Paper Mills, Green Bay, Wis.
Stevens, S. S., Stevens & Thompson Paper Co.
Stevenson, L. T., Mountain Mill Paper Co., New York.
Stewartson, A. J., Wrapping Paper Mfrs. Service Bureau.
Stocker, W. M., Cameron Machine Co.
Stokes, Henry W., York Haven Paper Co.
Stolz, R. R., Westinghouse Electric & Mfg. Co.
Stone, A. G., Continental Paper & Bag Mills Corp.
Stone, N. S., Mosinee Paper Mills.
Story, A. P., Chillicothe Paper Co., Chillicothe, Ohio.
Straus, R. I., American Paper Co.
Strong, E. P., Munising Paper Co.
Stuart, Kimberly, Neenah Paper Co., Neenah, Wis.
Styles, Stanley O., Martin Cantine Co.
Summers, B. S., Consulting Engineer.
Summers, L. K., Port Huron, Mich.
Summerville, O. R., Knowlton Bros., Watertown, N. Y.
Süreth, G., Zct. Ges. f. Zellstoff u Papierfabr.
Suter, H. W., Champion Coated Paper Co.
Sutermeister, Edwin, S. D. Warren Co.
Sutherland, D. M., D. M. Sutherland's.
Swallow, Francis P., U. S. Envelope Co.
Swenning, K. A., Mead Pulp & Paper Co.
Switzer, P. D., Bird Machine Co.

T

Tait, C. R., Hammermill Paper Co.
Tait, Wm. H., Sherman Corp.
Tallon, P. M., Hummel-Ross Fibre Corp.
Taylor, F. E., Taylor-Logan Papermakers Co., Holyoke, Mass.
Telfer, H. R., Detroit Sulphite Pulp & Paper Co., Detroit, Mich.
Teren, George, American Writing Paper Co.
Textor, C. K., Northwest Paper Co.
Thayer, Ralph K., Buffalo Envelope Co.
Theroux, W. H., Paper & Textile Mach. Co.
Thomas, R. H., Detroit Sulphite Paper Co.
Thompson, Hogan G., Champion Coated Paper Co.
Thompson, James, U. S. Envelope Co.
Thompson, L. A., Paper Makers Chemical Co.
Thorsen, Karl M., Central Paper Co., Muskegon, Mich.
Timmers, R. B., R. B. Timmers, Inc.
Tomlinson, G. H., Canadian Cellulose Co.
Torrey, R. M., E. B. Badger & Sons Co.
Townsend, C. W., U. S. Envelope Co.
Traquair, John, Mead Pulp & Paper Co.
Troop, E. F., P. H. Glatfelter Co.
Tucker, E. C., Chemical Paper Mfg. Co., Holyoke, Mass.
Tumy, P. Y., General Electric Co.
Tunstill, H. W., A. M. Collins Mfg. Co.
Turner, H. H., Defiance Paper Co., Niagara Falls, N. Y.

U

Uong, D. D., Fitchburg Paper Co., Fitchburg, Mass.
Uptegraff, T. M., Defiance Paper Co.

V

Van Horn, J. B., Holyoke Card & Paper Co.
Venturini, J. B., Cameron Machine Co., Brooklyn, N. Y.
Viergiver, C. D., Stecher Lithographic Co.

W

Wade, J. M., General Electric Co., Boston.
Wadham, Charles K., Z. & W. M. Crane Co., Dalton, Mass.
Wadleigh, G. R., West Virginia Pulp & Paper Co.
Wagner, C. L., J. O. Ross Engineering Corp.
Waldo, Guy, Flambeau Paper Co., Park Falls, Wis.

Walker, A. C. Bell Telephone Laboratories.
Walker, E. C., Collins Mfg. Co.
Walker, Samuel, White, Washburn Co.
Wall, J. J., General Electric Co.
Walleck, J. H., Northern Paper Mills, Green Bay, Wis.
Walsh, Thos. Compton, Hollingsworth & Vose Co.
Wandell, Kurt, National Cellulose Corp.
Wang, Sigmund, Canadian-International Paper Co.
Wardwell, S. B., West End Paper Co.
Ware, C. A., News Print Service Bureau.
Warner, W. J., Hampden Glazed Paper & Card Co.
Watson, R. S., Allis-Chalmers Mfg. Co.
Wayne, A. Pitts, York Haven Paper Co.
Webster, W. T., J. O. Ross Engineering Co.
Weed, Wm. J., Electro Bleaching Gas Co.
Wehmer, Paul F., Electrical Testing Laboratories.
Wellington, M. A., Fletcher Paper Co.
Wells, S. D., Paper Mill Laboratories, Quincy, Ill.
Wennberg, E. N., New York State College of Forestry.
Wenz, K. F., Champion Fibre Co.
Wessley, John A., Rhinelander Paper Co., Rhinelander, Wis.
West, C. J., Washington, D. C.
West, W. B., E. D. Jones & Sons Co.
Westad, R. G., Borregaard Co.
Weston, D. P., Esleeck Mfg. Co.
Weston, H. E., Paper Industry.
Wheeler, Thos. B., A. P. W. Paper Co., Albany, N. Y.
Wheelwright, G. W., G. W. Wheelwright Paper Co.
White, A. R., Mich. Electro-Chemical Co.
Whitley, F. P., Howard Paper Co., Urbana, Ohio.
Whitman, J. E., S. D. Warren Co.
Whitney, H. S., Bird & Son.
Wholean, G. R., Strathmore Paper Co.
Wilcox, A. H., Phoenix Paper Mills.
Wilcox, E. A., Oxford Paper Co.
Wilkins, C. B., Nashua Gummed & Coated Paper Co.
Wilkinson, W. N., Supply & Equipment Co.
Willemaine, F. H., American Writing Paper Co.
Wilkins, R. A., Bird & Son.
Willets, W. R., Oxford Paper Co., Brooklyn, N. Y.
Williams, Dexter B., Paper Makers Chemical Co.
Williams, F. M., Williams Apparatus Co.
Williams, W. V., Beckett Paper Co.
Williamson, George E., Strathmore Paper Co.
Willson, S. L., American Writing Paper Co.
Wilson, Norman W., Hammermill Paper Co.
Winfree, R. E., Bedford Pulp & Paper Co.
Wingate, H. A., C. H. Dexter & Sons, Inc., Windsor Locks, Conn.
Winslow, C. P., Forest Products Laboratory.
Witham, G. S., Jr., Noble & Wood Machine Co.
Wolf, R. B., R. B. Wolf Co.
Wood, F. P., Simplex Paper Corp.
Wood, Fred. E., U. S. Envelope Co.
Wood, L. G., Northern Paper Mills, Green Bay, Wis.
Woodruff, J. B., J. B. Woodruff Co.
Woodson, W. S., Jr., Albemarle Paper Mfg. Co.
Worcester, L. P., Brown Co.
Wright, C. R., Waterproof Paper & Board Co.
Wuenschel, J. F., Hammermill Paper Co.
Wyatt, G. D., Paper Industry.

Y

Yoerg, L. M., American Writing Paper Co.
York, Dana C., Oxford Paper Co.
Yulke, E., Continental Paper & Bag Mills Corp.

Z

Zucker, I., Oneida Paper Products, Inc.

DEXTER & SONS IMPROVEMENT

The new addition to the paper mill of C. H. Dexter & Sons, Inc., at Windsor Locks, Conn., covers a ground area 80 by 98 feet and adds about 30,000 square feet of floor space. Construction of this new four-story building is of reinforced concrete with red brick filled bays and steel window sash painted a bright green. A large freight elevator of the electric type, automatically operated, has been installed along with a passenger elevator.

One of the notable features of the new addition is the use in the office of window glass admitting the much talked-of ultra-violet rays, claimed to have the health-giving results of outdoor exposure to the sun. This is said to be the first industrial establishment to have such an installation, though it has been introduced in numerous hospitals and sanitariums.

The first floor is devoted to manufacturing and includes several mill offices. The second floor, slightly above the road level on the upper or canal side, is used for storage and shipping and has a covered truck entrance with air-locking device to prevent the rest of the floor from becoming chilled while trucks are being loaded. The third floor is used for finishing, sorting and packaging products. Floors in these stories are of wooden blocks, chemically treated for durability and fire resistance.

Special interest attaches to the top floor, used for offices exclusively and commanding a superb view in all directions. Entrance is through a waiting room giving a broad view of the general office and accounting department. A long passage way leads past various offices, filing room and lavatories to the private offices of President Arthur D. Coffin and the other prominent executives. Other space is devoted to sales and correspondence and offices of the superintendent and advertising manager. Walls and partitions on this floor are tinted a greenish blue, except in the executive offices, which are tinted to harmonize with the dark walnut desks and furniture. The entire fourth floor is covered with marbled inlaid linoleum and the executive offices are furnished with dark gray rugs.

A striking exterior feature is a tower with hospitable doorway and high illuminated clock. On the north side of the roof of the new building has been mounted the huge "Dexstar" illuminated sign, with letters four feet high, and exhibiting the trade mark of the concern. Originally the trade mark was a star, but to get a more instinctive mark and one that would avoid litigations the word "Dexstar" was coined.

The Dexter papermaking establishment is 93 years old, but in the numerous additions and replacements the original building has entirely disappeared. In the early years of the industry heavy cover papers were made and manila rope and rags were used as materials. In recent times the plant has operated entirely on high-grade thin papers.

Half a dozen distinct lines are manufactured, each possessing special interest and sales strength. Manifold paper is made for various uses, including carbon copies. The air mails and the increased volume of foreign correspondence are factors in promoting a demand for such paper. Tissue paper for decorations, artificial flowers and wrapping of gifts is a big seller and embossed tissue paper meets a demand for wrappings where a special air of elegance is sought. Another line is for the wrapping of silverware, jewelry and various metals and is chemically treated to prevent tarnish. A line of carbonizing tissues is produced for coating by manufacturers of carbon paper. Finally a line of condenser or insulating tissues is made for use in radio and electrical apparatus, a product for which, needless to say, a large and growing demand has developed.

MANNING MILLS' NEW PUMPING STATION

The new pumping station of the J. H. Manning Paper Company on which construction work was started last fall has been completed at a cost of approximately $80,000. The station and equipment are the last word in plants of this nature. The pumps and other equipment are electrically driven and are controlled from a switchboard in the paper mill two blocks away.

The new station is erected on the bank of the west sprout of the Hudson River and is to furnish the entire water supply for the Manning mills. Since the Manning plant was erected in Green Island a number of years ago the company has secured its water from the state basin. In recent years this supply has been found unsatisfactory and the company two years ago began to lay plans for using the cleaner water from the Hudson River.

As the first step in these plans the firm purchased the Odd Fellows Hall property with a large frontage on the Hudson River. Later application was filed in Washington for permission to install the necessary pipes in the bed of the river. This permission was granted last summer and contract for construction of the pumping plant was awarded shortly after. The project called for the installation of nearly a quarter of a mile of water main extending from the new station to the paper mill.

The uncertainty regarding the supply from the state basin is believed to have had some influence on the company's decision to switch to the Hudson River for its water supply. For several years past there has been widespread agitation for the abandonment of the Champlain Canal which feeds the state basin. On two occasions a bill barely escaped passage in the Legislature providing for abandonment of the canal.

GEORGE FORRESTER VISITS COAST

George Forrester, representing the International Paper Company, has been spending some time in the Pacific Northwest, making a survey of the paper and pulp industry, as well as some of the sawmills. He visited a number of paper plants in Washington, and spent some time at the St. Helens plant in St. Helens, Ore. While Mr. Forrester would not commit himself on the purpose of his trip, there seems to be some idea in paper circles that his company may be interested in operating a plant in the Columbia river territory.

TECHNICAL ASSOCIATION MEETS

Thirteenth Annual Convention of the Technical Association of the Pulp and Paper Industry is Held at the Waldorf-Astoria Hotel, New York

E. C. Tucker, Vice President of the Crocker-McElwain Co., and the Chemical Paper Mfg. Co., Holyoke, Mass., Is Reelected President—Ronald G. Macdonald, Acting Secretary of the Association Is Made Secretary-Treasurer—Report of the Officers and Various Committees Show That the Expansion of the Organization Both in Membership and Usefulness to the Industry Has Been Exceedingly Gratifying

THE Technical Association of the Pulp and Paper Industry held its thirteenth annual convention at the Waldorf Astoria Hotel in New York from Monday to Thursday inclusive of this week. All the meetings were of a very interesting and helpful character and were well attended by the technical men of both this country and Canada. E. C. Tucker, the president of the association, delivered his annual address as follows:

THE PRESIDENT'S ADDRESS

Today we open the thirteenth annual meeting of this association. The year just ended marks another milestone of successful progress. The growth in the membership during this past year has been very gratifying to your officers and is a tribute to the interest the membership as a whole is taking in the work of the association. Each year it has seemed that the rapid growth of the association must be reaching a peak, but each succeeding year the growth of the last year has been exceeded. I must call attention to the members, however, that the mere numerical growth of your association is only desirable as a recognition of the excellent work the association is doing and the continued high place it holds in the pulp and paper industry.

Committees

May I at this time bring forcibly to the attention of newer members and repeat to the others that the continued advancement of the association depends in no small degree on the interest in and the accomplishment of the standing committees. As opportunity presents to interest yourselves in the work of an individual committee do not fail to do so. There you will find the double opportunity to be of service to the industry and at the same time broaden your own knowledge of the subjects at hand. And here I want publicly to commend the chairmen of the standing committees and the men who have worked with them during the past year for the high service which they have rendered. The committee work is the most important work the association is doing and insofar as this work is actively furthered and led by alert men, just so far will your association hold its high place in our industry. May I urge upon you a full attendance at the sectional and committee meetings and a prompt aligning of yourselves with the committee or committees with whose work you should be closely in touch.

E. C. TUCKER, PRESIDENT

Fall Meeting

The fall meeting of the association was held in Middletown, Ohio. It was carefully planned, highly instructive, and thoroughly enjoyed by an attendance which taxed the hotel facilities to their limits. In behalf of the association, I want at this time openly to thank the local committee whose untiring work made this meeting so thoroughly worth while. May I also express the appreciation of the association for the courteous hospitality extended by the mills and manufactories in and about Middletown that contributed in so large a degree to the success of the fall meeting.

At the annual meeting of our association two years ago we recommended to the American Paper and Pulp Association the appointment of a national committee on stream pollution. This committee was appointed and at the fall meeting of the Technical Association the American Paper and Pulp Association announced the appointment of C. M. Baker, formerly sanitary engineer with the State Board of Health of Wisconsin, to take charge of this work and to devote his whole time to this important problem. The difficulties presented in this work are such as to merit the best thought of every technical man in the industry, and I bespeak for Mr. Baker the full cooperation of this group both as an association and as individuals, to the end that everything possible may be done toward the improvement of the waters and streams in pulp and paper making states.

Your association has just entered into a contract for the printing of a revised and en-

larged booklet on Paper Testing Methods. The first edition of this work compiled by one of your committees was so popular that it had to be reprinted within a year and now the reprint is exhausted and we are to have a new edition.

The continued interest and enthusiasm of the membership of the association in the work handled under the Service to Members plan, has resulted this year, in the largest number of inquiries and reports ever before handled. If you are not availing yourself of this important service you are doing an injustice both to yourself and to the company with which you are employed. So diversified are the inquiries under this plan that there must be something of peculiar interest to each of you. Personally I feel that I have gotten real value out of this service during the past year and I expect to get even more in this next year. This plan you will remember bears a strict resemblance to a national indoor sport, in that everybody who plays must *ante*. On the other hand it is quite dissimilar in the point that every who *antes* in this game is bound to win. Please get in touch with the Secretary and tell him the subjects of special interest to you in order that you may receive the special inquiries relating to them and then *ante* with your own views and opinions.

There is one other way in which you can get the benefit of this whole service. Induce your company to become a corporate member in the association, at an annual fee of $100 and you will then get a complete transcript of all special inquiries and replies. I assure you that you will find this well worth while.

It was with genuine regret that your executive committee accepted the resignation of W. G. MacNaughton as secretary and treasurer of your association to take effect December 1, 1927. Mr. MacNaughton has been with the association many years and under his skillful guidance has brought it from the period of adolescent youth into the vigor of full early manhood. Too much cannot be said of the helpfulness to the association of Mr. MacNaughton's attentive leadership. He brought to the association a wide knowledge of both men and processes and an earnestness and sincerity of purpose which has contributed largely to its growth and prestige. Mr. MacNaughton left the association to take up larger duties with the News Print Service Bureau. While we regret his leaving we cannot but take some measure of satisfaction in knowing that others besides ourselves appreciated the excellent work Mr. MacNaughton had done and his prospective value to the industry. We are glad that he stays in New York, and that his counsel and continued interest in the work of the association is thus assured.

After a careful survey of possible candidates and a thorough examination into his ability and fitness, your executives appointed Ronald C. Macdonald as acting secretary to complete the unexpired term of Mr. MacNaughton. Mr. Macdonald's training and experience fits him well for this work. He is a graduate of Massachusetts Institute of Technology; was for two years with the Pejebscot Paper Company; two years at the Research Laboratory of the Oxford Paper Company; and has lately been with the McGraw-Hill Publishing Company on the staff of Chemical and Metallurgical Engineering. The start Mr. Macdonald has made on the work of the association augurs well, I believe for its continued growth and standing.

About three years ago we had presented at the Annual Meeting, a paper on vacuum drying by Ogden Minton, a member of this association. We rejoice now with Mr. Minton in the excellent progress he has made in the commercialization of his process. He has rendered outstanding service to the industry and well deserves the commendation of this Association.

Two years ago W. O. Mason presented his paper on the Masonite process. This process is now being carried out on a commercial scale and has met with unprecedented success. Mr. Mason has made a signal contribution to our industry and as president of this association it gives me pleasure publicly, to make acknowledgment of this contribution.

Careful attention to the report of the secretary-treasurer will show the finance of your association to be in excellent condition, thus making possible the best we can give in service to our industry. May we look forward to this next year as the year of greatest opportunity for service the association has yet had.

Ronald G. Macdonald, acting secretary of the association presented the following report:

THE SECRETARY'S REPORT

This report should be looked upon as a weighted index of the records of the Technical Association for 1927. The association experienced a change of secretaries on December 1st, on which day Mr. MacNaughton became engineer of the News Print Service Bureau. However, about 95 per cent of the duties of the secretary's office were performed under the direction of Mr. MacNaughton.

Membership

In 1927 there were 101 new members elected. Taking into consideration 51 resignations the net growth in membership was 50. On December 31st there were 504 members, 161 Associate Members and 96 Junior Members. This makes a total of 761 individuals.

In addition to this the association had 56 Corporate Members.

Special Tappi Reports

Under the Service to Members Plan, the association members cooperated in preparing thirty-one special reports dealing with important technical and manufacturing problems relating to pulp and paper making. The titles of these reports include the following:

1 No. 60 Sulphite Practice Discussed
2 No. 61 Humidity Conditions in Carton Plants
3 No. 62 Steam per Ton of Sulphite and Newsprint
4 No. 63 Control of Relative Strength of Paper with and Across the Grain
5 No. 64 Sulphate Rotary Burner Operation
6 No. 65 Smudging in Lithography with Coated Paper
7 No. 66 Surges on Electrical Transmission Lines
8 No. 67 Sulphate Recovery Room Chemical Losses
9 No. 68 Slime Troubles
10 No. 69 Rag Stock from Holland Blues
11 No. 70 Plant Maintenance in Board Mills
12 No. 71 Hanging Pulpstones
13 No. 72 Effect of Grain Direction in Lithography
14 No. 73 Data on Soda Pulp Digesters
15 No. 74 Two-Sidedness in Color of Paper
16 No. 75 Washing, Riffling, Screening and Dewatering Sulphite
17 No. 76 Unslaked Lime vs Hydrate for Manufacture of Bleach
18 No. 77 Shower Pipes for Board Machine Cylinders and Felts
19 No. 78 Screen Equipment for Bleached Sulphite
20 No. 79 Control of Air Porosity in Making Paper
21 No. 80 Sulphite Digester Design
22 No. 81 Rubber Couch Rolls for Wet Machines
23 No. 82 Preparation of Chips for Sulphite
24 No. 83 Roll Edge Protection
25 No. 84 Wavy Paper
26 No. 85 Forced Circulation
27 No. 96 Drier Canvas Troubles
28 No. 87 Pulp Quality from Sapwood and Heartwood
29 No. 88 Troughs for Button and Cable Conveyers
30 No. 89 Splices for Supercalendered Paper
31 No. 90 Stationary vs Tumbling Digesters for Sulphate

Fall Meetings

In October the Association met at Middletown, Ohio, and as is customary, a large portion of the program was devoted to visiting mills in the Miami Valley district. The Local Committee and the operators of the industrial plants provided an excellent program which was appreciated.

It may be said at this time that the fall meetings lend themselves to a schedule which includes

1. Plant inspection trips
2. Recreation
3. Symposiums.

There are many problems that are of common interest to a large proportion of the membership. Such problems include in part:

corrosion resistance, severe service conditions, power applications, steam consumption, economics, stuff preparation, training, material handling, pumping, etc. A concentrated study of any one or two of these basic subjects would be appropriately handled at the fall meeting.

At the Middletown meeting a resolution was passed approving the features of the McSweeney Bill, H. R. 17406 and in particular that part relating to an increased annual appropriation for the Forest Products Laboratory at Madison, Wisconsin. At the present time interest is being centered on this bill and also on the Brown Bill, H. R. 8561 which deals specifically with the subject of an appropriation of $75,000 for the conduct of scientific experiments, investigations and research relating to the disposal of waste material from pulp and paper mills.

Cooperation of the Lockwood Trade Journal Co.

In a report of this nature it is fitting that recognition be made of the assistance rendered to the Association by Henry J. Berger, editor of the *Paper Trade Journal* and by the Lockwood Trade Journal Company. While it is true that the relationship existing between TAPPI and the publishers of its papers is of mutual benefit it is also worthy of note that the spirit in back of this cooperation is harmonious, enthusiastic, and liberal.

In addition to reserving space in the *Paper Trade Journal* each week for the publication of papers, etc., by the Technical Association the Lockwood Company will make a worthwhile contribution to the preparation of the Technical Association Papers and will assume the financial burden of publishing, "Paper Testing Methods," "A Bibliography of Paper Making Materials," and "A Bibliography of Paper Making from 1900 to 1927."

RONALD G. MACDONALD, SECRETARY

Committee Activities

It is evident that the individual committees have as their objective the compilation of data relating the special problems that are of interest to them and to the pulp and paper industry. The publications of the Technical Association assist investigators in studying the record of work accomplished or in progress. The current year is interesting in this regard inasmuch as the Association will be instrumental in publishing several books as indicated in the report of Clarence J. West's Committee on Abstracts and Bibliography. The Association is indebted to Mr. West and his associates for the many large, accurate and complete bibliographies that they have prepared for us.

Three new committees were organized a year ago and have carried on important Association activities. These include the committees on Stuff Preparation, Roofing Felt, and the Mechanical Handling of Materials. The interest in the subject of stuff preparation is reflected by the interesting program of this committee's sectional meeting. The Roofing Felt Committee has devoted its first year to the problem of creating interest on the part of the felt manufacturers in its work. Heretofore the technical men of this branch of the industry have been more interested in the treatment of the finished paper with asphalt, etc., than they have in the problems involved in making the paper base. There is clear evidence that the Roofing Felt Committee will be instrumental in focusing more attention on the paper problem in the next year or two.

Through the appointment of C. M. Baker as engineer of the American Paper and Pulp Association further interest has been awakened in the subject of waste utilization and stream improvement. The great quantity of data that has been compiled by the Technical Association will be of material assistance to the mills that cooperate in the solution of the problem.

Added impetus is evident in the work of the Committee on Training for the Industry. To clear up some of the confusion that seems to exist relative to the purpose of this committee I may say that it is concerned with the preparation of men in the technical schools for work in the industry. To attain th' end men representing the industry occasionally address students in colleges and define some of the technical and production problems of the industry. During summer vacation periods an effort is made to place many students in temporary employment in pulp and paper mills so that they may become intimately acquainted with practical operating procedure.

The broad field covered by the Heat, Light and Power Committee enables it to deal with the many ramifications of the problems of power and steam generation and distribution. In regard to the latter, there is an apparent need for more specific information relating to the amount of power required to drive equipment, expressed in terms of a ton of product prepared in one hour. To obtain data such as this it will be necessary to have cooperation on the part of both the paper and equipment manufacturers.

Acknowledgments

In the day by day personal service to members the secretary is grateful for the wholehearted cooperation that he has received from members, the Forest Products Laboratory and the Bureau of Standards. Since relinquishing his duties as secretary of the Association, Mr. MacNaughton has given generously and unstintingly of his time and knowledge in assisting his successor. In no small measure is the success of this meeting and the work of the Association due to the assistance of Miss Kramer and Miss Blair of our office staff.

THE NEW OFFICERS

The following officers were elected for the ensuing term:

President, E. C. Tucker; Vice president, P. H. Glatfelter; Secretary-Treasurer, R. G. Macdonald.

Executive Committee: Chairman, E. C. Tucker; P. H. Glatfelter; Allen Abrams; D. C. Everest; H. O. Keahy; R. H. Laftman; B. T. McBain; M. A. Krimmel; E. R. Low; W. G. MacNaughton.

Technical Association Papers and Reports

Presented at the Annual Convention of the Technical Association of the Pulp and Paper Industry at the Waldorf-Astoria, New York, February 21 to 23, 1928—Representative Men of the Pulp and Paper Industry Throughout the Country Discuss Numerous Important Problems of Timely Interest.

Radio Control of Moisture in Paper Drying

By W. D. Sommerville [1]

Since the advent of radio telegraphy in recent years few applications of the principles learned from this invention have been applied to commercial purposes. Great advances have been made in the science of radio telegraphy and telephony and the use of these methods of communication has enormously increased.

In the last few years, due to our discovery of the possibility of detecting minute changes in weight and length by measuring the changes in capacitance of a condenser an immense field has been opened up and a new method of measurement has been made practicable.

This discovery enables one to weigh or measure continuously, without physical contact with the substance to be weighed or measured, and brings into the field of measurement moving bodies, such as materials moving in a continuous web, also changes of length of such a minute amount that no caliper can accurately detect. This information can be continuously showing the variations from normal and it may be made the means of controlling mechanisms to direct and modify these variations.

In the past there has been no method of determining the weight of a given area of a moving web or material, and all weighing had to be done after the completion of the operation or by means of taking a sample from the moving web, cutting it to a definite size and weighing it. This latter method only gives the weight of a very small proportion of the whole and all changes had to be based on the evidence obtained from this small sample, whereas the new method gives a continuous record of all the material passing through the condenser plates.

Development of Weighing by Radio

About three years ago Albert Allen, an amateur radio enthusiast, who was working in an experimental department of the Eastern Manufacturing Company tuned his radio set in on a station and while listening to a concert, put a piece of paper between the plates of his tuning condenser. This act had the effect of throwing his radio out of tune but by regulating the dial the station was tuned in again. He noticed that every time he placed this piece of paper in the condenser his dial had to be moved the same definite amount to get back on the station. On experimenting with different weights of paper he found that there was a definite relation between the weight and the change in capacity. From this the deduction was obvious that if you could indicate or record the changes of capacity you would be actually recording and indicating the changes in weight. In order to test this out commercially an oscillator circuit and pick-up circuit were built. The oscillator was built to be operated by 110 volt alternating current which was put through a transformer, transforming the current up to 450 volts on the plate and down to 7½ volts on the filament.

In conjunction with the oscillator a pick-up circuit was designed with a variable condenser to enable one to tune in to the oscillator wave length. Another fixed condenser was connected in parallel in the tuned circuit. This latter condenser consisted of two metal plates located a fixed distance apart, and through which the material to be weighed had to be passed. The changes in capacity of this condenser was caused by the variation in weight of the material passing through.

The pick-up circuit must be tuned somewhat below resonance so that any increase of capacity would tend to tune the circuit towards resonance and consequently less capacity would tend to tune the circuit away from resonance. It now remained to indicate or record the varying amounts of current picked up by the tuning circuit. This has been done by passing the radio frequency current through a thermocouple, turning it into direct current, and reading the quantity of this current on a milliammeter. The milliammeter is graduated so that definite changes in weight are indicated or recorded. The capacity of a condenser is governed by three things:

(1) it varies directly as the area of the plates;

(2) it varies inversely as the distance between the plates, hence doubling the distance halves the capacity;

(3) it varies according to the dielectric constant of the medium between the plates.

By altering one of these factors the capacity can be changed. In order to weigh material it is essential that the only one of these factors needed to be changed is the dielectric constant. The dielectric constant of air is 1 and that of rubber is approximately 4 depending on the grade of rubber that is used. A total substitution of rubber for air increases the capacity four times, and a partial substitution of rubber for air increases the capacity in a weighted ratio depending on the proportions of rubber and air that are located between the plates.

Avoiding Temperature Effects

One of the early troubles in the weight meter that was discovered and finally overcome was the effect of temperature on the readings. In the first place changes in temperature altered the size of the condenser plates and eventually by conduction altered the shape of the frame holding the plate, moving them nearer together or further apart.

It was therefore necessary to use or attach a temperature compensator or design a condenser which would not change with the temperature variations. The former was worked out first, with good success, but as it added another circuit and a condenser very sensitive to temperature changes, it was decided to design a condenser frame which would be unaffected by heat. This has been done by combining changes of design with the use of invar steel which has a negligible coefficient of expansion and is ideally suited for use as a material of construction in this instrument.

[1] Eastern Manufacturing Co., So. Brewer, Maine.

Voltage Control

Another seemingly overwhelming difficulty encountered with the first commercial installation was the tremendous variations in the line voltage from which the oscillator received its power. Fluctuations of as much as 40 to 50 volts were not uncommon. Ballast tubes, separate alternators, line transformers, and many other complicated and expensive remedies were tried. The final solution, however, was not only superior in performance to the other methods, but required no additional equipment of any kind. As a power oscillator of the type used in the weightmeter is in reality a miniature radio transmitting station, one might imagine that radio reception in the vicinity of a mill in which the verigraphs are employed would not be at all desirable. This apparatus, however, in no way interferes with radio reception. The oscillator is tuned to a wavelength slightly in excess of 600 meters so as to be out of range of the broadcasting frequency range and in addition to this the oscillator is so completely shielded that an exceedingly sensitive super-heterodyne located but a hundred yards away is unable to pick up the carrier. The leads to the indicating meters which are often exposed for long periods do not carry radio-frequency current inasmuch as the thermal-junction belonging to each meter is located within the shielded oscillator cabinet.

First Installation in Rubber Factory

In order to develop this machine along the lines where it would be most useful and to use it where fluctuations in weight were most uncontrolled, it was decided to put installations in rubber factories and work out the difficulties of rubber control before applying it to the control of any other type of material being manufactured.

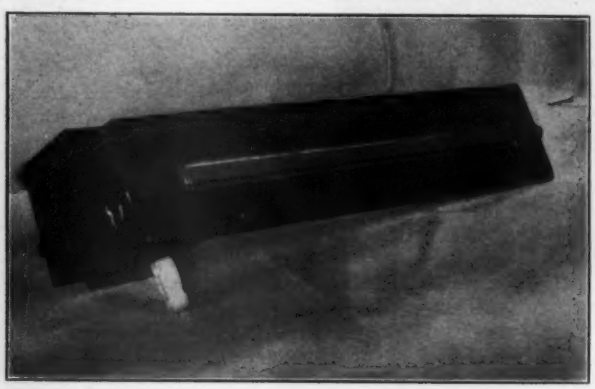


FIG. 1

Hygrometer Element Used for Measuring Moisture Content of Paper.

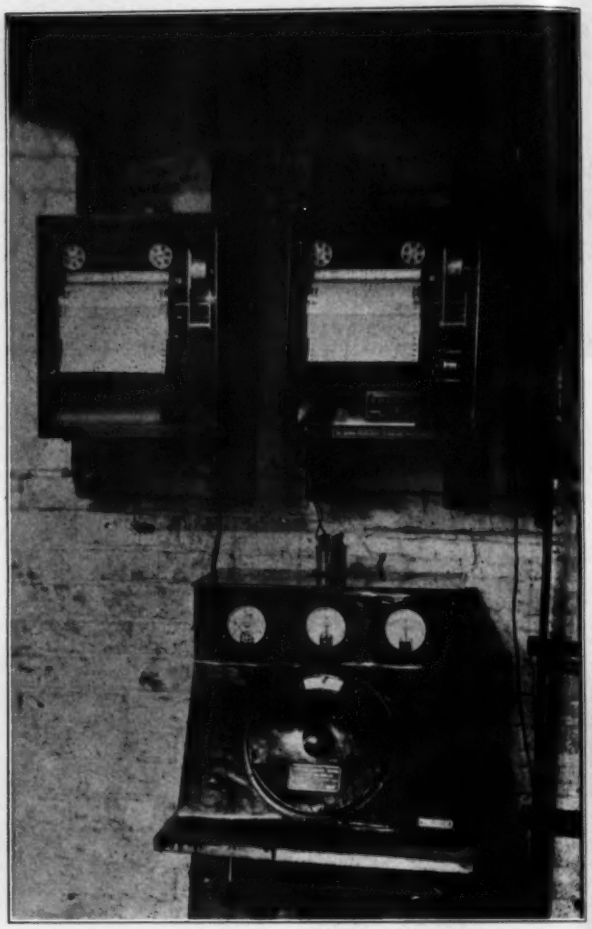


FIG. 2

Recorders for Moisture Content and Basis Weight of Paper.

From numerous experiments it has been found that different substances present different problems and although the basic principles are the same, the design of the weighing condenser and modifications in the oscillator circuit are necessary to fit this instrument to existing conditions. Considerable experimental work has been done on the project of weighing paper in the web as it was being made on the paper machine but due to the present close control of paper weights as compared to rubber, the rubber indus-

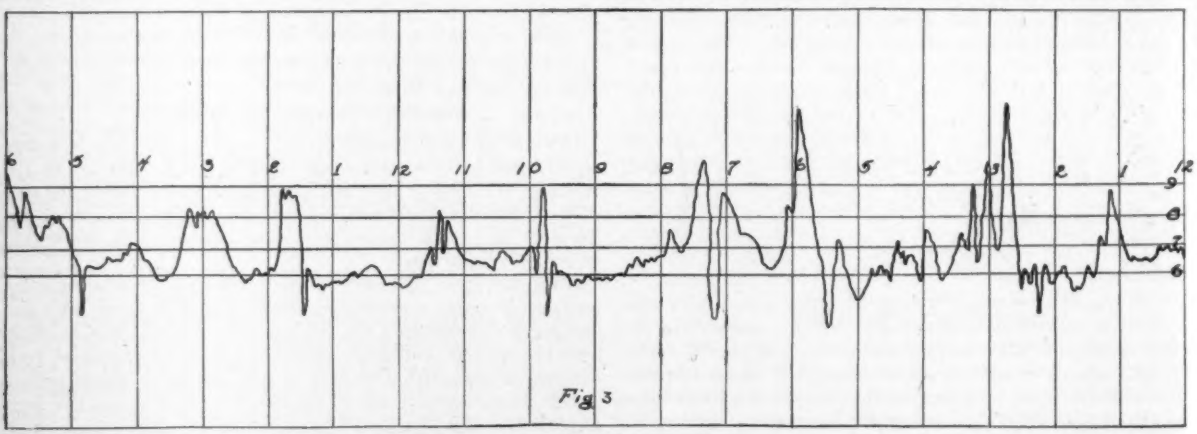
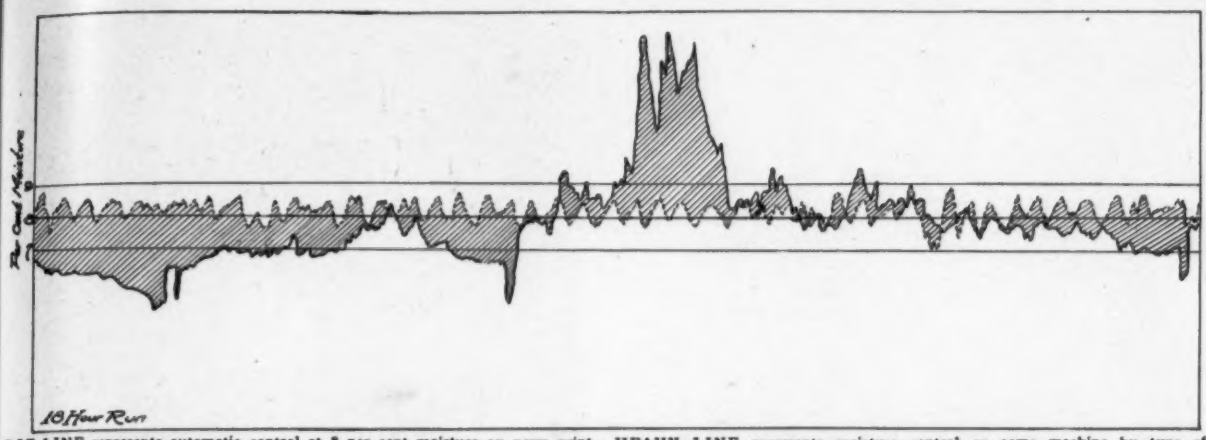


FIG. 3

Curve Showing Moisture Content of Paper Under Manual Control.



DOT LINE represents automatic control at 8 per cent moisture on news print. HEAVY LINE represents moisture control on same machine by type of control originally used before using our automatic. Period of test 18 hours. CROSSHATCHED SECTION shows variation between the two methods. NOTE.—Old form of control ran for about 6 hours at 7 per cent; also the period of an hour when it was over 10 per cent and probably blackened. Average moisture 8.2 per cent. Minimum tolerance (from 7.6 to 9.2 per cent; per cent time between 7.5 and 8.5) 94 per cent. Average moisture 7.5 per cent. Maximum tolerance (6 to 11 per cent; per cent time, between 7.5 and 8.5) 39 per cent.

try was chosen for the initial development. The machine now is used for weighing rubber and has made possible large savings to the rubber industry. It is the product of several years experimentation and the solving of numerous mechanical and electrical problems similar to the details of temperature control that have been explained.

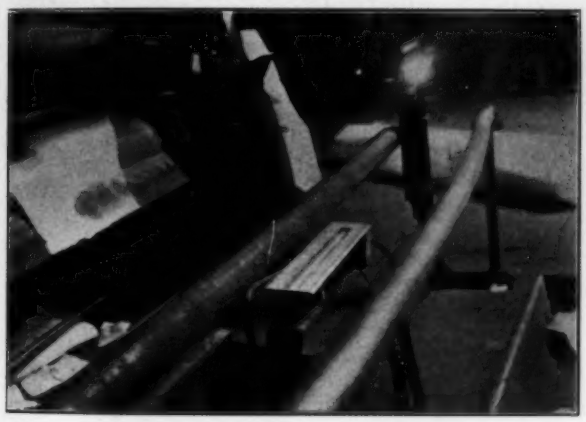


FIG. 5

Hygrometer Located Between Calender and Reel Over Which the Web of Paper Passes.

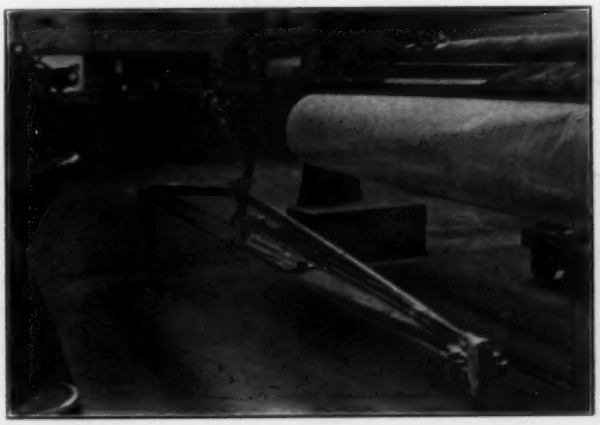


FIG. 5A

Close Up of Hygrometer and Spreader.

Measurement of Moisture Content of Paper

In regard to the paper field, the principle of measurement by changes in capacitance has been applied with great success to the recording of moisture in the sheet and the automatic control of steam for the driers. Variations of moisture is held within very narrow limits. One of the largest news print concerns in the

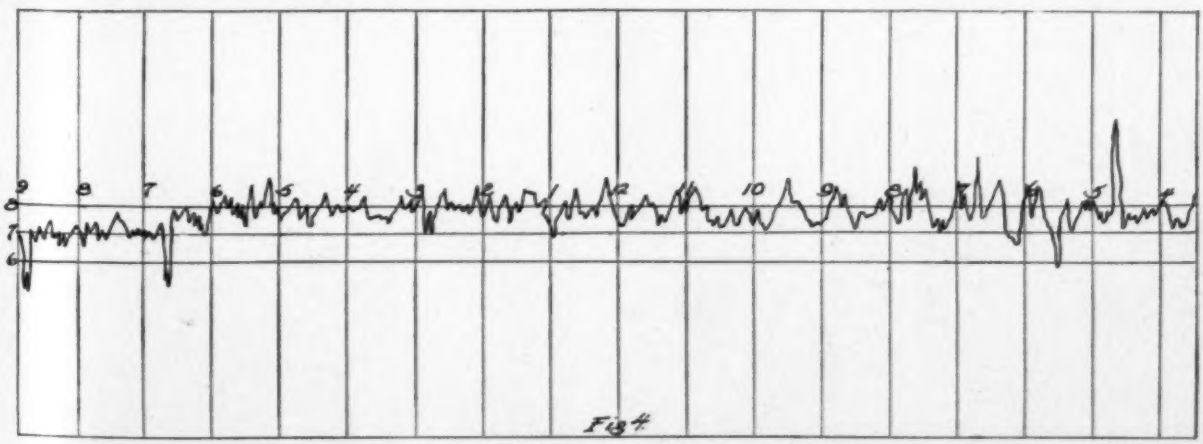


FIG. 4

Curve Showing Moisture Content of Paper Under Automatic Steam Regulation.

world has been able to obtain an increase of moisture content of one and one half per cent by use of this machine. It is furthermore enabled to make a more uniform sheet and is using less wood pulp to make a desirable sheet.

It is well known that many substances vary in length with changes of moisture content. By using a hygroscopic element to move one plate of a book condenser in a tuned radio circuit, almost any degree of multiplication can be secured with negligible friction and thereby enable the recording instruments to be placed at a distance from the machine.

A hygrometer was built in which the sensitive element consisted of a hygroscopic material. One end was attached to the hygrometer case and the other end to the movable plate of a book condenser. (Fig 1.) This condenser was put in parallel with the tuning condenser of the tuned circuit so that any change in the length of the element changed the tuning of the circuit and in turn varied the amount of current picked up. These changes were recorded by the milliammeter. As there was a definite relationship between the movements of the ribbon and the amount of current recorded on the milliammeter, it was easy to calibrate the milliammeter so that a definite change in current represented a definite change in the moisture content of the paper. It was found by experiment that changes of less than 0.25 per cent of moisture in the paper could be recorded.

A Continuous Record Possible

One of the advantages of a continuous record of moisture (Fig. 2, 3, 4) is that a true story of the moisture content is shown at a glance. Individual paper samples give misleading results due to the quick variations in moisture from sample to sample. Two samples torn from a paper machine a few seconds apart are liable to show differences of 1 per cent or more. This variation is due to actual differences in moisture content added or substracted as the case may be from the error introduced by the human element in testing. It is unsafe to rely on the accuracy of moisture tests closer than 0.5 per cent under the best conditions or closer than 1 per cent under ordinary mill conditions.

FIG. 5B
Closeup of Hygrometer and Spreader.

When regulating the steam supply to the dryers on the evidence of single samples poor results are likely to be obtained, inasmuch as the trend of the paper moisture is not evident. A sample may be very dry but tending to become more moist when a decrease in steam would shortly make the paper too wet and steam supply would have to be increased again to dry it out. The backtender on a paper machine under ordinary conditions has a difficult task

FIG. 8
Another Arrangement of Automatic Valve Mechanism.

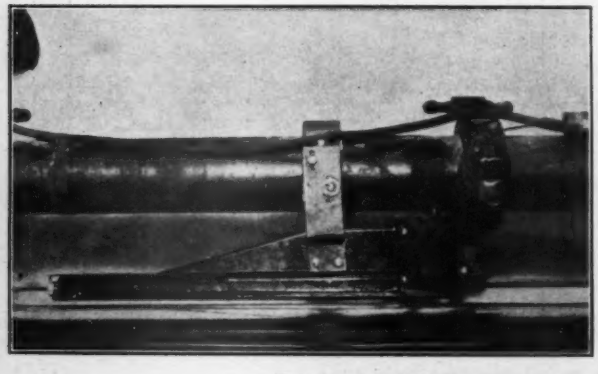


FIG. 6
Hygrometer in Another Installation Located Above the Reel Drum which Carries the Web of Paper.

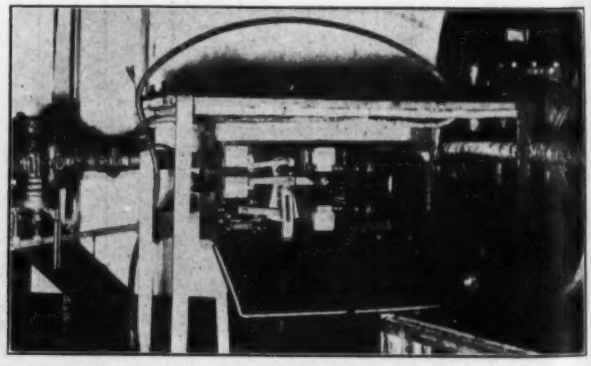


FIG. 7
Automatic Valve Control for Exhaust and Live Steam.

in holding a uniform moisture content in the sheet if he has no accurate method of knowing what the moisture is and has to rely on the feel of the paper, the steam pressures, the appearance of his felts, etc., and in addition the evidence obtained by an occasional sample. On account of these difficulties the average backtender "plays safe" and keeps the paper moisture at a minimum because fewer troubles develop on a machine from paper that is too dry than from paper that is too wet. The troubles from extra dry paper are passed along to the printer or converter and the troubles from extra wet paper occur on the paper machine and are obvious in the form of wrinkles, wet streaks or blackened paper.

Any device which will hold the paper just below the maximum allowable moisture content will permit the paper manufacturer to reduce the cost of his paper and will give the printer or converter a more desirable product, easier to print and free from static. Close moisture control is of inestimable benefit to both makers and users of paper.

Automatic Control of Moisture Content

To practically apply the information recorded, an automatic controller was developed which would make the necessary steam changes to hold the moisture constant. This controller is the only automatic device which controls the moisture and is based on the actual moisture of the finished sheet. The hygrometer is usually located between the last stack and the reel. (Figs. 5 and 6.)

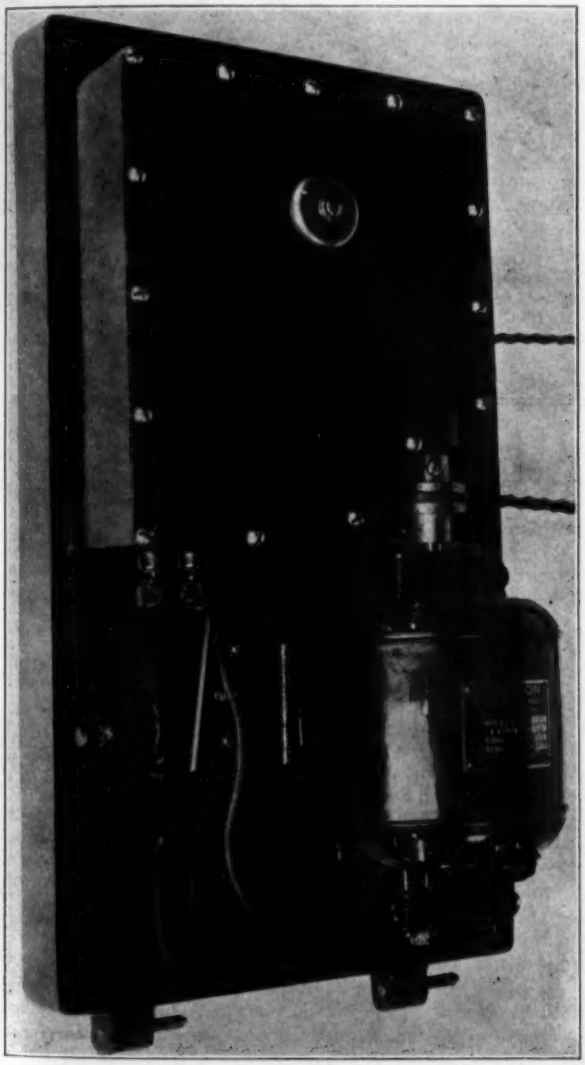


FIG. 10
Motor Operating Steam Valves.

FIG. 9
Picture of Verigraph Installation on a Paper Machine.

The first development was an electrically operated valve mechanism (Figs. 7 and 8) controlled from the milliammeter, electrical contacts being made in the milliammeter and thereby operating the valve motor. The needle of the milliammeter was set at the moisture reading required. No contacts could be made until the needle moved from this position. As the paper became damp the current increased and caused the needle to move up the scale and make a contact which would open the steam valve to a definite amount.

The milliammeter mechanism makes a contact every fifteen seconds. The time of contact varies from four to five seconds according to the setting of the contactor. If the paper gets drier than the amount it was set for the steam supply is decreased.

This simple form of control was found by experience to have the same weakness all other forms of automatic control have had in the past. It did not take into consideration the time lag between that of changing the steam supply and the effect of this change on the paper. In other words, steam would be turned on or off until the condition of the paper came to normal and by that time too great a change had been made in the driers.

If the time elapsing between putting on steam and producing an effect on the paper is five minutes it means that steam changes would take place for at least five minutes more than is necessary. This causes the moisture in the paper to hunt between extra dry and extra wet. The problem was to cut down this hunt to the narrowest possible limits. This was accomplished by a mechanism called a "corrective follow up," which operated by means of a follow up and a corrective timing device which could be set to synchronize with the steam lag. The steam is altered only when it is actually needed. The instrument will make no further changes over the initial correction unless the moisture again changes within the time lag period. The determining of the best time lag period to set the instrument for varying conditions, and the amount of steam to be changed for a definite change in moisture is a problem which varies with different machines.

The moisture problem on a paper machine is of an individual character for each machine. Each problem is based on certain principles and modified by conditions inherent to the particular machine and the grades run on it.

Summary

To sum up, this machine will in the first place give a continuous record of actual moisture in the paper, and from this information will automatically control the moisture and hold it within considerably narrower limits than it has been possible to obtain in the past.

Radio Moisture Control French Patents

I. Process and Device for Determining the Moisture Content of Paper on the Paper Machine*

This invention relates to a process and to a mechanism by means of which the moisture content of paper can be determined directly on the paper machine without having to tear off a portion of the sheet, and the moisture content can be indicated continuously and automatically at any desired point as the paper is being made, without interfering in any way with the operation of the machine. This can be obtained by exposing at any given moment a limited portion of the surface of the sheet to an element which is affected in some suitable manner by the moisture content of the sheet at the point where the instrument is placed, and measuring the condition of the element under the effects of the moisture content, or variations in moisture content, of the sheet.

On interposing a dielectric sheet between two conducting plates, there is obtained an electric condenser, the electric characteristics of which will depend on the area of the plates, their distance apart and the nature of the dielectric. Consequently, if an element capable of easily giving up or absorbing moisture is selected as the dielectric, the characteristics of the condenser will vary according to the moisture content of the dielectric, since the nature of the latter is altered on changing its moisture content.

Hygroscopic Element Used

The present invention makes use of a condenser with a dielectric which is sensitive to humidity conditions, and means are provided for subjecting this dielectric to the humidity conditions of the paper web on the paper machine. Several of the electric characteristics of condensers vary according to the nature of the dielectric; but the capacity lends itself best to the purpose of the invention. In the description which is given below of one embodiment of the invention, the capacity changes due to the moisture content of a hygroscopic dielectric have been used; but the use of any other electric characteristic which varies with the moisture content of the dielectric falls within the scope and spirit of the invention.

Though various methods are suitable for measuring the capacity and indicating its variations with changes in the dielectric, an exceptionally sensitive and eminently suitable method consists in using the condenser as a tuning element for a high-frequency, oscillating electric circuit, the variations in the capacity of the condenser varying the frequency of the circuit. These variations in frequency can easily be measured and indicated.

Fig. 1 is a perspective view of part of the mechanism of the invention. Determining moisture on the Paper Machine.

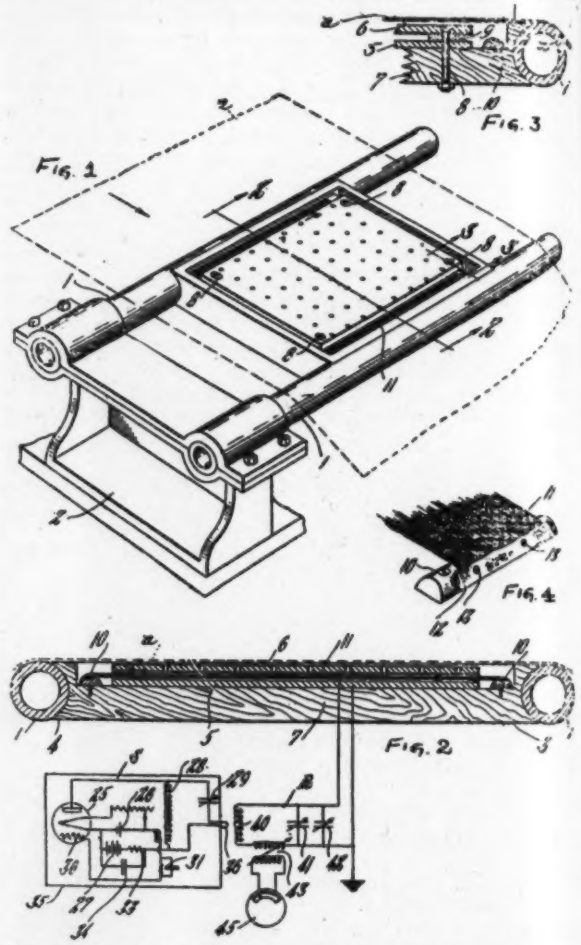
Fig. 2 is a detail view, to a larger scale, along line 2-2 of Figure 1, the figure showing also diagrammatically the connection of the electric circuits and associated mechanisms.

Fig. 3 is a cross-sectional view, to a larger scale, along line 3-3 of Figure 1.

Fig. 4 is a detail perspective view, showing the construction of the hygroscopic dielectric element.

(1) represents two spaced bars or pipes, over which passes the paper web A and which are supported at the ends by suitable frames (2). A receptacle or vessel (3) open at the top, is mounted so as to slide along bars (1) the opposite edges (4) being shaped so as to rest on the bars. Inside the vessel, and completely below its top edge, is an electric condenser comprising a lower plate (5) and an upper perforated plate (6). These plates can be attached to the bottom (7) of the vessel, as by bolts 8 made of some insulating material such as bakelite, insulating washers (9) being placed between the plates so as to keep them the required distance apart. Anchoring bands 10 are provided on the bottom (7) of the receptacle (3) at the ends of plates (5) and (6), for attaching the ends of the hygroscopic dielectric.

Any convenient hygroscopic dielectric can be used; but rayon (artificial silk) is particularly well suited for this purpose. It can conveniently be used in the form of a ribbon, the ends of which are embedded in a material such as sealing wax (12) (Fig. 4),



and the edges of which are then cut allowing to remove the filler threads and leaving only the warp threads extending between the embedding sealing wax (12) at each end, which is then attached to the anchoring bands (10), as by screws (13). If desired, the dielectric can be treated with a hygroscopic salt, such as cobalt chloride, to increase its sensitiveness.

There is thus obtained a condenser consisting of the plates (5) and (6), between which is a dielectric which can absorb or give up moisture according to the humidity of the surrounding atmosphere, which in turn depends on the moisture content of the paper web passing over the open top of the receptacle (3). Any variation which takes place in the electric characteristics of this condenser will therefore depend on the variations in the moisture content of the dielectric, which is proportional to a certain extent to the moisture content of the paper web. As in the case of all mutually interdependent conditions, measuring any one of these characteris-

* French Patent No. 618,406, issued to Atlantic Precision Co., Boston, Mass.

tics will give a measure of the moisture content of the paper, and variations in the latter will be represented by corresponding variations in the electric characteristics of the condenser. Of the various electric properties the capacity is the one most easily measured to obtain the moisture content of the paper, and in order that the instrument may be sufficiently sensitive to indicate small variations in the moisture content, the condenser is best used as tuning element for an oscillating electric circuit, resulting in a variation of the frequency of the circuit with changes in the moisture content. For this purpose, the condenser may be used in conjunction with transmitting or receiving radio circuits.

Transmitting Circuit

In Fig. 2, (S) is a transmitting circuit of this nature, which may be of any suitable type capable of generating electric oscillations of the desired frequency. As shown, this transmitting circuit comprises a three-tube element (25), having an A-battery (26) and B-battery (27) and tuning devices comprising an inductance (28) and a condenser (29). The latter is variable, so as to permit of modifying or adjusting the frequency of the circuit as required. The grid (30) is connected through grid leak (31) to a coil 32 which is in inductive relation with the inductance (28) and which is connected with the filament circuit. Resistance (33) is connected in series with B-battery (27) to protect the tube, and a condenser (34) can be shunted around this resistance so as to permit high-frequency waves to pass. This equipment can be protected, as by a shield (35), outside of which projects loop (36), the latter being in effect an extension of coil (28) and serving as a connection for the receiving circuit, represented at (R). This receiving or detecting circuit comprises a coil 40 losely connected with loop (36) and tuned by means of the variable condensers (41) and (42), one of which is a vernier condenser, and also by means of the condenser formed of plates (5) and (6) and the hygroscopic dielectric (11). To this receiving circuit is connected, by means of a transformer (43), a current-indicating instrument such as thermo-galvanometer (45).

Supposing that the transmitting circuit sends out waves of the desired frequency, condensers (41) and (42) can be adjusted so that circuit (R) will be tuned to resonance with circuit (S), at which point a maximum electric current will pass through the galvanometer (45). If, now, the humidity conditions of the atmosphere surrounding the dielectric (11) are changed, such as may be caused by the moisture in the paper web passing over the condenser, the dielectric will absorb or give up moisture, and the capacity of the condenser will change, throwing circuit (R) out of resonance with circuit (S) and reducing the intensity of the current passing through galvanometer (45). Condenser 41 and 42 can then be adjusted to tune circuit (R) back into resonance with circuit (S), the change in condensers (41) and (42) representing the change in capacity due to the moisture in the hygroscopic dielectric, and consequently in the paper sheet.

When the two circuits have been tuned to complete resonance with each other, they are thrown out of resonance by either an increase or a decrease in the capacity of the tuning condenser. In either case the galvanometer reading falls and does not show whether the moisture content of the paper has increased or decreased. The instrument, however, may be made to indicate the direction of the change by tuning the circuits to a point somewhat to one side of the maximum point of the resonance curve, so that the direction of the variation of the reading will indicate the nature of the change in the moisture content of the paper. Under these conditions, the instrument can be graduated to read directly in terms of the moisture content of the paper.—A.P.-C.

II. Device for Automatically Measuring and Adjusting the Weight of Paper on the Machine*

This invention relates primarily to a mechanism for controlling the weight of paper as it is being made on a paper machine, but certain features of the invention can be put to other important uses.

Up till now it has been current practice to periodically take samples of the sheet of paper on the machine, dry them and weigh them, and if the weight found varies appreciably from that which is desired the required adjustment is made at the slices or at the stock inlet of the machine. Another sample is then taken, dried and weighed to see if the adjustment has had the desired effect, and this process is repeated until the sheet is found to be of the correct weight, within the tolerances permitted by trade usage. This method of regulation is slow and tedious, and frequently results in returning a considerable quantity of stock to the beaters. Once the machine has been properly regulated, it is practically impossible to prevent variations in operating conditions on the machine, which result in undesirable variations in the weight of the finished paper.

Continuous Weighing

According to the invention, a continuous indication of the weight of the paper can be obtained without having to take samples or affecting the operation of the machine in any way. The necessary adjustments in the admission of the stock to the machine can then be made at any desired instant, and the weight of the paper can easily be maintained constant within reasonable limits. Not only can the weight of the paper be indicated but, if desired, the mechanism can be so arranged as to automatically adjust the flow of stock on the machine to keep it constant.

The Figures

Fig. 1 is a plan of part of the mechanism.

Figs. 2, 3 and 4 are cross sections of details along lines 2-2, 3-3, 4-4, respectively, of Fig. 1, Figs. 2 and 3 showing in addition parts of the electric circuits diagrammatically.

Fig. 5 is a perspective view of a detail of the condenser.

Fig. 6 is a cross section of a detail of part of the same condenser.

Fig. 7 is a section of a detail of part of the moisture-compensating condenser.

Fig. 8 is a somewhat diagrammatic view of the mechanism for automatically controlling the stock feed.

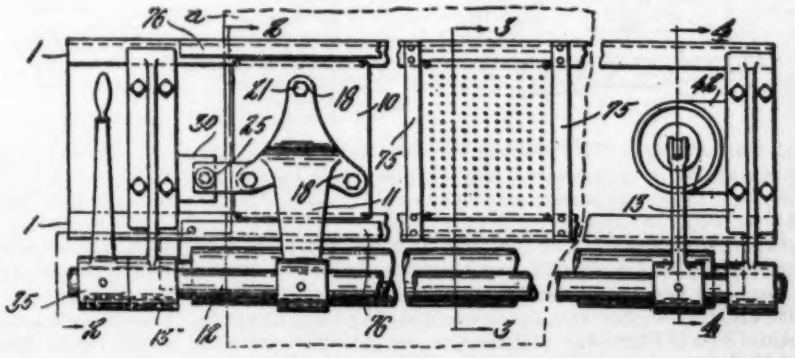


Fig. 1

* French patent No. 620,381, delivered to Atlantic Precision Co., Boston, Mass.

Fig. 9 is a cross sectional view along line 9-9 of Figure 8.

Fig. 10 is a diagram of a resonance curve.

Arrangement Described

Referring first of all to Fig. 1 to 7, in which (1) indicates spaced supporting angle-irons extending transversely across the machine at any suitable point, preferably just behind the last drying roll, the paper web (a) passes over the angle-irons and also over a metal plate (2), which is one of the conducting elements of a condenser. As best seen in Fig. 6, the plate (2) is carried by the horizontal edges (3) of the angle-irons (1), and soft rubber blocks (4) are interposed between them to allow of slight angular adjustments of the plate. A screw (5) passes through a hole in each corner of the plate (2) and through one of the rubber blocks (4), and is screwed into edge (3). These screws connect the plate (2) electrically with the angle-irons, so that the condenser plate is grounded through the frame of the paper machine.

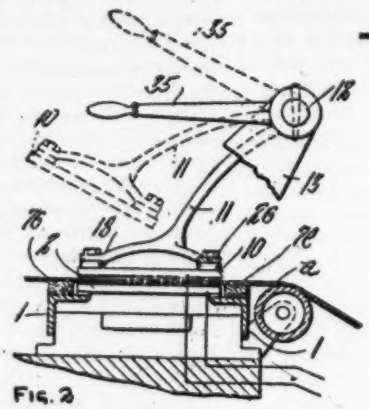


FIG. 2

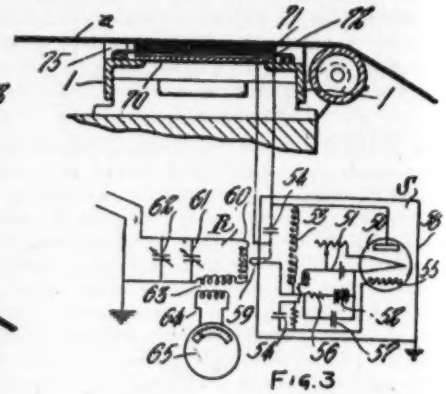


FIG. 3

Over the web (a) is an upper condenser plate (10), which, as shown, is carried by a bracket (11), fixed to the oscillating shaft (12), journalled in brackets (13), which are attached to the angle-irons near the ends. Plate (10) is electrically insulated from bracket (11); and, as shown in Fig. 6, this can be effected by passing the bolt (15) through a soft rubber pad (16) and an insulating packing (17) at each one of the three arms (18) at the lower end of bracket (11). On the upper face of each one of the supporting arms (18) is an insulating washer (19), against which press the adjusting nuts (20) and (21), which are screwed at the upper end of bolt (15). The three arms (18) furnish a three-point support for plate (10), so that its position is easily adjusted by means of the bolts (15); and when the bracket (11) is lowered, plate (10) is parallel to and spaced from plate (2). The lower plate could also be supported at three points, instead of at four as shown. The distance between plates (2) and (10) when bracket (11) is lowered can be adjusted, for instance by means of screw (25) passing through a threaded extension of one of the arms (18) and resting on the extension (30) of one of the supporting brackets (13). A nut (31) can be used to prevent the adjustment of screw (25) from being disturbed.

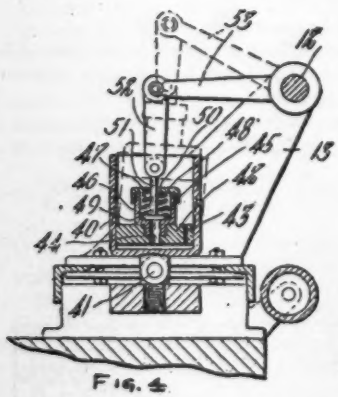


FIG. 4

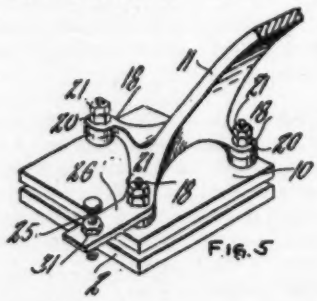


FIG. 5

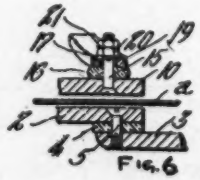


FIG. 6

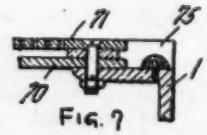


FIG. 7

In order to facilitate the threading of the paper (a) through the machine, the plate (10) can be raised to the position shown in dotted lines in Figure 2; for this purpose, one end of the oscillating shaft (12) carries a hand lever (35), which can be raised by the operator. It is desirable that the plate (10) should be lowered into its operating position while the machine is running, and in order to relive the machine tender of the trouble of keeping the plate raised while he is threading the paper, and in order that he may not be tempted to block the plate in its raised position, a dash-pot mechanism (Fig. 4) can be provided to act so as to slowly lower the plate (10) into its operating position and to allow of its being raised rapidly when required. The dash-pot mechanism also prevents the vibration of the machine from disturbing the adjustment of plate (10) relative to plate (2). As shown in Figs. 1 to 4, the dash-pot comprises a cylinder (40), pivoted at (41), on an extension to bracket (13). Inside cylinder (40) is a piston (42) with a small opening (43) and a large central opening (44), the latter normally remaining closed by valve (46) which is pressed against its seat by spring (47). The latter is compressed between the upper face of valve (45) and a cap (48), which is screwed at the upper end of the valve chamber (49) and has a central opening (50) through which passes the valve-stem (51). The upper end of the valve-stem is connected to the connecting rod (52), the upper end of which is connected to arm (53), and the latter is keyed to the oscillating shaft (12). When the operator raises the hand lever (35), the shaft (12) turns and the valve (45) is first raised from its seat, thus allowing air to pass through the opening 44; on further raising the hand lever, the piston (42) rises freely. As soon as the pressure on lever (35) is released, spring (48) presses against valve (45) thus closing opening (44), and the combined weight of plate (10) and arm (11) tends to turn the oscillating shaft (12) in the opposite direction and to force piston (42) to the bottom of its cylinder, the air escaping from under the piston through the small opening (43). The size of this opening is calculated so as to keep plate (10) raised for a sufficient length of time to easily allow the paper to be threaded, and plate (10) is ultimately brought to its proper position relatively to plate (2).

Plates (2) and (10) are the conducting plates of an electric condenser, the electric consisting of the paper web and the layer of air between the paper and the plates. When the mass of paper passing between the plates varies, the relative amounts of air and paper in the dielectric also vary, and the electric characteristics of the condenser are correspondingly modified. The variations in the electric characteristics of the condenser thus afford a means of detecting and measuring variations in the paper between the plates, and as the latter are not in direct contact with the web, the paper can pass through without trouble and a continuous indication of its weight can be obtained.

The particular characteristic which is made use of in this invention is the capacity of the condenser. It can be measured by any

appropriate means; but in order that small changes in weight may be easily detected with certainty, the capacity of the condenser is represented as being used to tune the frequency of one oscillating electric circuit relatively to that of another oscillating electric circuit with which it is connected. As shown in Figure 3, the circuit tuned by the capacity is a receiving circuit (R) connected to an oscillating transmitting circuit (S). Any suitable oscillating circuit can be used; and in order to obtain optimum results it should be as stable as possible. Circuit (S) is a low-power radio circuit, comprising a transmitting tube (50) with a filament or A-battery (51) and a plate or B-battery (52), the plate circuit being tuned by an inductance (53) and a variable condenser (54), (55) represents a coil in inductive relation to coil (53) which is connected with the grid of tube (55) through grid outlet (54). A resistance (56) is provided next to B-battery (52) for protection, and the latter is shunted by means of condenser (57) which forms a by-pass for high-frequency currents. This transmitter is preferably protected, as by a grounded shield (58), a portion of the circuit passing outside the shield in the form of a loop (59), which is a continuation of coil (53) and with which the receiving circuit (R) is loosely connected. The latter circuit comprises the coil (60) which receives the waves from loop (59), and across this coil are shunted the variable tuning condensers (61) and (62), one

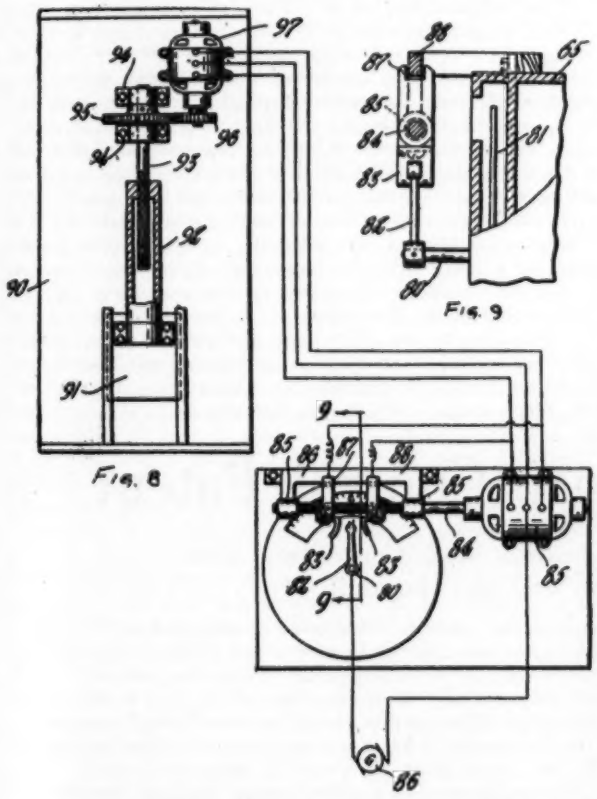


Fig. 8

Fig. 9

of which is a vernier condenser to allow of accurate tuning. Around condensers (61) and (62) are shunted the plates (2) and (10) and a thermo-galvanometer or other current-indicating device (65) is connected in any suitable manner, e.g., by means of transformer coils (63) and (64).

Suppose, now, that we have a suitable frequency in the transmitting circuit (S), for any given capacity of the condenser (2-a-10) the receiving circuit (R) can be tuned to resonance with (S), and the current through (R) is then a maximum and gives a maximum reading on thermo-galvanometer (65). Any variation in the capacity of the condenser formed by plates (2) and (10) and the intervening sheet (a) caused by variation in the weight of the latter will throw the receiving circuit out of resonance with the transmitting circuit; the current passing through the receiving circuit will decrease and the reading on (65) will be correspondingly lowered. The receiving circuit can then be brought back to resonance, if desired, by varying the capacities of condensers (61) and (62), this change being evidently a measure of the change in

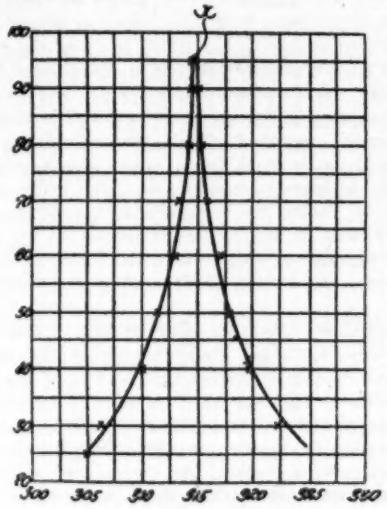


Fig. 10

the capacity of plates (2) and (10) and the intervening sheet due to the change in the mass of the latter.

Principle Explained

Fig. 10 shows a resonance curve for this type of receiving circuit. It is evident from this curve that fairly small variations in wave-length from the resonance point (*X*) correspond to considerable variations in the current passing through the circuit. As, however, the current falls on either side of the resonance point (*x*), a decrease in the current does not indicate whether the tuning capacity has been increased or decreased; it is therefore considered preferable to adjust the receiving circuit to one side of the resonance point (*x*), so that an increase in the current will indicate a variation in the capacity in one direction and decrease in the current will indicate a variation in the opposite direction, the particular direction of the change in capacity depending on which side of the resonance point the receiving circuit has been adjusted.

It is seen, however, that the variation in the wave-length of the receiving circuit (*R*) is due to changes in the mass of relatively moist paper; and as the moisture content itself varies, it also affects the capacity of the condenser, and a device must be provided to correct for variations in the moisture content, in order that the dry weight of the paper may be ultimately obtained. The desired correction is obtained by using a supplementary condenser the electrical characteristics of which are determined and modified by the moisture content of the sheet; and preferably the correction is obtained by tuning the transmitting circuit (*S*) to correspond with this modification.

Moisture Compensation

The supplementary condenser is represented in Figures 1, 3 and 7 by a lower plate (70), carried by the angel-irons, (1), and placed at such a distance from plates (2) and (10) that there is practically no induction between the two condensers; above plate (70) is the upper plate (71), which is perforated to allow passage of air. Between plates (70) and (71) is placed a hygroscopic dielectric substance (72). The most suitable material for the purpose consists of rayon (artificial silk) made from cellulose, which may conveniently be used in the form of a ribbon, the ends

of which have been embedded in sealing wax and the middle portion cut in such manner that the filler threads can be removed, leaving the warp threads with the ends embedded in the wax. If desired, this element can be treated with a hygroscopic salt, such as cobalt chloride, to increase its sensitiveness to variations in humidity. The supplementary condenser comprising the plates (70) and (71) and the hygroscopic dielectric is placed entirely below the sheet (*a*). The guide-bars (75) placed on either side of the condenser-plates and the guide-bars (76) at both ends, form a sort of shallow box, the top of which is closed by the travelling web (*a*). The hygroscopic dielectric is placed near the sheet in such a manner that the moisture in the paper will moisten the air inside the box formed by the guide-bars within which is placed the supplementary condenser. The hygroscopic dielectric will then absorb or give up moisture to an extent approximately proportional to the moisture-content of the paper. The construction and method of placing the supplementary condenser are not of themselves claimed as part of this invention but are described in detail in the application filed the same day by the present inventor for "A Process and Device for Measuring the Moisture Content of Paper."

The supplementary condenser is constructed so that its capacity, due to the moisture content of the hygroscopic dielectric, balances in the reading on the instrument that portion of the capacity of the main condenser due to plates (2) and (10) and the intervening sheet of paper. The final adjustment of this correction can be obtained by taking a hygroscopic dielectric which is a little too large and removing a portion. As the area of plates (71) and (72) and the distance between them is fixed, and the changes in the dielectric are due exclusively to absorption or loss of moisture, variations in capacity can be due only to changes in the moisture content. Plates (70) and (71) of the supplementary condenser are shunted by condenser (54) of the transmitting circuit (S) to vary the frequency of this circuit, and the closeness of the resonance with that of the receiving circuit determines the reading on instrument (65).

Since, with proper care, the only variation which comes into play is due to changes in the amount of dry paper, instrument (65) can be calibrated to read directly in weight of dry paper.

Automatic Regulation

It is thus seen that the mechanism described affords the operator a constant indication of the dry weight of the paper as it passes over the condenser, and if this weight is not sufficiently close to that required, he can, in any suitable manner, regulate the amount of stock fed on to the wire of the machine. If desired the mechanism can be connected to a device which will automatically regulate the flow of stock. Such a device is represented somewhat diagrammatically in Figs. 8 and 9. Referring to these two Figures, it will be seen that the pivot (80) of the indicating hand (81) of instrument (65) can carry a contact arm (82) which, when the hand (81) indicates too great a variation in weight, makes contact with one of the terminals (83), threaded on screw (84), carried in bearings (85) on supporting frame (86). The terminals (83) are provided with arms (87) which abut against the central portion (88) of the supporting frame (86) to prevent the terminals from rotating with the screw. The latter is rotated by means of motor (85), which receives its current from any suitable source, such as (86) (this is evidently a misprint, both on the Figure and in the text, and should presumably be (89) in both places—Trans.). (90) refers to the head-box which regulates the flow of stock on the apron of the paper machine by means of the slice (91). The latter is carried by a hollow tube (92) screwed onto the threaded shaft (93), which is carried in the bearings (94) screwed on the wall of the head-box. Between the bearings (94) is the gear (95) keyed to the shaft (93) and meshing with the pinion (96) keyed to the shaft of motor (97).

If the indicator (81) brings the arm 82 in contact with either of the terminals (83), motors (85) and (97) are excited simultaneously, motor (97) adjusting the position of slice (91) so as to admit the proper amount of stock to obtain the required weight of the sheet, and motor (85) displacing the terminals (83) in the same direction as the arm (82) to break the contact between the two and cut off the current from the two motors. If the contact is broken before motor (97) has effected the proper adjustment of the slice, the arm (82) will again be displaced in the same direction to make contact with the terminal (83) and further adjustment will take place, the operation repeating itself until the weight of sheet is within the required tolerances. If, on the other hand, the adjustment by means of motor (97) has been carried too far, the indicator (81) will turn in the opposite direction, bringing arm (82) in contact with the other terminal (83) and reversing motor (97). In this way, the flow of stock on to the wire is automatically regulated to keep the weight of the sheet constant within the required tolerances.—A.P.-C.

Clark's Radio Moisture Control Patent

Apparatus for Determining, Indicating and Controlling the Moisture Content of Paper and like Materials.

PROVISIONAL SPECIFICATION No. 12,691, A. D. 1926

I, JAMES D'ARGAVILLE CLARK, of 418, Old Kent Road, London, S. E. 1, a British subject, do hereby declare the nature of this invention to be as follows:—

In this apparatus I make use of the fact that the dielectric capacities of air, cellulose and other like materials and water are appreciably different. In its simplest form I place a sheet of absolutely dry material between two plates forming an air condenser when the increase of capacity as measured by any well known means gives a measure of the substance or thickness of the material. If now I place a sheet of the same material having a certain moisture content between the plates the increase of capacity of the plates will give a measure of the substance or thickness of the material and of the amount of moisture contained therein. The difference between these two determinations will give a measure of the moisture present.

By the use of a thermionic tube, a spark coil or other well known means and by placing an inductance in parallel with these plates in a well known manner, I form an oscillating circuit. By inserting an additional inductance or capacity made variable I may cause this circuit to oscillate at any desired frequency.

If a sheet of material is placed between the plates the capacity of the two plates will be increased and the circuit will oscillate at a lower frequency. If the sheet is now either moistened or dried the frequency will be either lowered or raised. By measuring the frequency of the circuit by means of a wavemeter or other well known means, and by making allowance for the effect of the dry material a measure of the moisture content is readily determined.

In place of an apparatus for measuring the frequency of the oscillating circuit so formed, I may place in the proximity of this circuit other tuned circuits constructed so that their natural periods can be arranged to be different. By means of the variable inductance or capacity in the oscillating circuit while a sheet of material with a certain moisture content is in between the plates, I may cause it to oscillate with a frequency corresponding to one of the tuned circuits in proximity which will then oscillate in resonance. By varying the moisture content of the

material between the plates, I then alter their capacity and so cause one or other of the tuned circuits to oscillate. By connecting a neon lamp, electric bulb or other device to each of these tuned circuits, I have an indication of the moisture content of the material.

In place of using a sheet of material I may mount the plates of the oscillating circuit on a machine making a continuous web of paper or like material so that the web passes between them and by means of the variable inductance or capacity in this oscillating circuit cause it to oscillate with a frequency corresponding to that of one of the tuned circuits in its proximity. If now the web becomes drier or thinner it will raise the frequency of the oscillating circuit and cause one of the circuits tuned to a higher frequency to resonate and if the web becomes wetter or thicker the frequency of the oscillating circuit will become lower and a circuit tuned to a correspondingly lower frequency will resonate. In this manner I may have a number of tuned circuits each connected to a differently colored lamp or other device and by means of the variable inductance or capacity in the oscillating circuit tune it to the natural frequency of one of the tuned circuits when the material, its thickness and its moisture content are normal. If now the thickness or the moisture content alters one of the other tuned circuits will be caused to resonate and by means of the distinguishing lamps or other devices indicate whether the thickness and the moisture are above or below normal.

In place of, or in addition to the indicating devices in these tuned circuits, I may insert an electric relay in the nature of a rectifying crystal or thermionic tube or other well known device so arranged that upon one of the circuits oscillating the relay is operated and a local circuit closed which could then be made to cause a bell or other warning device to sound, to open or close a steam valve thereby increasing or decreasing the amount of steam being used to dry the web, or to operate any other device or apparatus as may be desired.

May 18, 1926.

JAMES D'A. CLARK.

Improvements in or relating to a Method and Means for Determining, Indicating and/or Controlling the Moisture Content and Quality of Materials.

This invention relates to a method and means for determining, indicating and / or controlling the moisture content and quality of materials such as paper, cellulose and air.

According to the present invention means for measuring or indicating the moisture content and/or the quality of materials comprises an electrical circuit including electrical oscillation producing means and means to vary a condition of said circuit comprising a condenser whereof the dielectric consists of the material whose moisture content and/or quality is to be measured or indicated and means to measure or indicate said condition.

By substituting for the material whole moisture content and/or quality is to be measured a piece of similar material but in a perfectly dry condition and with other conditions the same, the condition of the electrical circuit will be varied and the difference in the two cases is a measure of the moisture content and/or the quality of the material.

In the earlier specification referred to above the condenser is connected in parallel with an inductance to constitute a main oscillatory circuit and the condition of the circuit which is varied by the condenser is the frequency of the oscillations in the main oscillatory circuit; the means to measure or indicate said condition comprises means to measure the frequency of the oscillations.

According to a modification of the present invention the condenser is connected between the oscillation producing means and a rectifier and means to measure or indicate the current from the rectifier, such as a milliammeter or a galvanometer.

In a modified arrangement the condenser may be connected at one side to the oscillation producing means and to the rectifier and at the other side to the other side of the rectifier or to earth when one side of the rectifier is earthed. Thus when the oscillation producing means and the rectifier comprise thermionic tubes their filaments will be connected together and earthed and one side of the condenser will then be earthed.

In carrying the invention into effect a test condenser may be provided with switches to connect it in the circuit in place of the condenser whose dielectric consists of the material under test. This may be set so that when connected into the circuit the reading of the current measuring or indicating means will be that which should be obtained when the dielectric under test is of the required quality. Thus the test condenser provides a standard of reference for the conditions of the circuit.

The present invention also contemplates the application of the present invention and of the invention set forth in the specification of the earlier application to the control of the thickness, texture and moisture content of paper during its manufacture.

For this purpose the condenser is constituted by a metal roll of the paper making machine, a plate or roll disposed in proximity to said roll and the paper web or sheet as the dielectric.

Preferably the face of the plate adjacent the roll is shaped to conform to the roll.

Preferably also the edges of the plate are bevelled to assist the passage of the paper under it and by forming planes of edges transverse to the direction of movement of the paper, parallel any wear of the plate will not cause variations in the surface area.

A plurality of such plates may be arranged to cooperate with the roll and means provided such as levers, eccentric or other mechanism to withdraw them from or replace them on the roll as desired. The plates may be insulated from each other or connected electrically to form a single condenser.

In the arrangement in which the condenser is connected at one side to the oscillation producing means and to the rectifier the metal roll of the machine constitutes the earthed side of the condenser.

Any change in the substance, thickness, or moisture content of the paper coming from the machine will cause an alteration of the capacity of the condenser whereby the condition of the electrical circuit is varied and the indication or measurement of such variation immediately draws attention to the change in the paper so that the operating conditions may be readily controlled and a uniform product obtained.

When the condenser is employed as part of a main oscillatory circuit, according to a further feature of the invention, the means to measure the frequency of the oscillations produced therein consists in a second oscillatory circuit having a frequency approaching that of the main oscillatory circuit and which is heterodyned with the main oscillatory circuit to produce a beat note of the difference in frequencies of the two circuits. A small change in the frequency of the main oscillatory circuit due for example to an alteration in the texture, thickness or moisture content of the material forming the dielectric of the condenser will immediately change the beat note. The frequency of the beat note may be measured by a frequency meter or in any other known and convenient manner, if desired after amplification.

The changes in condition of the electrical circuit may operate indicating or controlling means as for example electric lamps of varying kinds or colors or mechanism such as to control the paper machine whereby the correct conditions of working may be automatically maintained.

The features set forth in the earlier specifications may be applied where suitable in the present invention.

What Does It Cost per pound ?

The Bird Save-All recovers a high percentage of the solids from the white water and does it in such a way that the cost per pound of fibre recovered is as low as possible.

Isn't that what you want in a Save-All?

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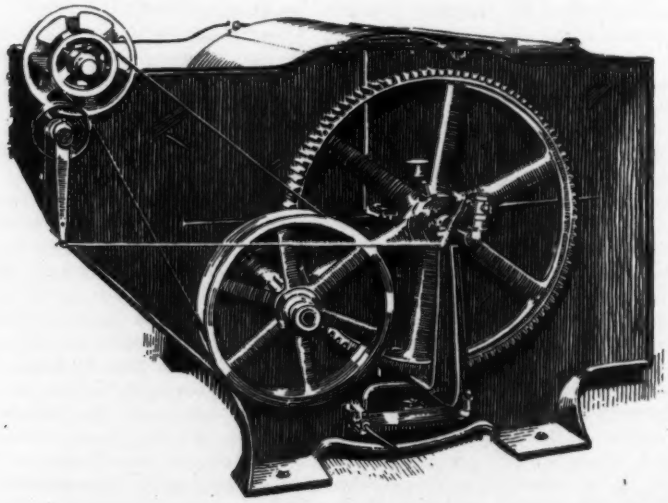
SOUTH WALPOLE MASSACHUSETTS



1741

The BIRD SAVE-ALL

Improvements in or Relating to a Method and Means for Determining, Indicating and/or Controlling the Moisture Content and Quality of Materials.

COMPLETE SPECIFICATION

This invention relates to a method of and means for determining, indicating and/or controlling the moisture content and quality of materials such as paper, cellulose and air.

According to the present invention means for measuring or indicating the moisture content and/or the quality of materials comprises an electrical circuit including electrical oscillation producing means and means to vary a condition of said circuit comprising a condenser whereof the dielectric consists of the material whose moisture content and/or quality is to be measured or indicated and means to measure or indicate said condition. By substituting for the material whose moisture content and/or quality is to be measured a piece of similar material but in a perfectly dry condition and with other conditions the same, the condition of the electrical circuit will be varied and the difference between the two cases is a measure of the moisture content and/or the quality of the material.

The condenser may be connected to an inductance and electrical oscillation producing means in an electrical oscillatory circuit and the condition which is varied by the condenser is the frequency of the oscillations in the circuit; the means to measure or indicate said condition comprises means to measure the frequency of the oscillations in the circuit.

According to a modification of the invention the condenser is connected between the oscillation producing means and a rectifier and means is provided to measure or indicate the current passing through the rectifier such as a galvanometer.

In a modified arrangement the condenser may be connected at one side to the oscillation producing means and to the rectifier and at the other side to the other side of the rectifier or to earth when one side of the rectifier is earthed. Thus when the oscillation producing means and the rectifier comprise thermionic tubes their filaments will be connected together and earthed and one side of the condenser will be earthed.

A test condenser may be provided with switching means to connect it in the circuit in place of the condenser whose dielectric consists of the material under test. The test condenser may be set so that when connected into the circuit the reading of the means to measure or indicate the condition of the circuit will be that which should be obtained when the dielectric under test is of the required quality. Thus the test condenser provides a standard of reference for the condition of the circuit.

The present invention may be applied to the thickness, texture and moisture content of paper during its manufacture.

For this purpose the condenser is constituted by a metal roll of a paper making machine, a plate or roll disposed in proximity to said roll and the paper web or sheet as the dielectric. Preferably the face of the plate adjacent the roll is of a shape to conform to the roll.

When the condenser is employed as part of an oscillatory circuit according to a further feature of the invention the means to measure the frequency of the oscillations produced therein consists in a second oscillatory circuit having a frequency approaching that of the main oscillatory circuit and which is heterodyned with the main oscillatory circuit to produce a beat note of the difference in frequencies of the two circuits. A small change in the frequency of the oscillatory circuit due for example to an alteration in the texture, thickness or moisture content of the material forming the dielectric of the condenser will immediately change the beat note. The frequency of the beat note may be measured by a frequency meter or in any other known and convenient manner, if desired after amplification.

Forms of the present invention will now be described with reference to the accompanying drawings wherein:—

Fig. 1 illustrates the application of the invention to a paper making machine,

Fig. 2 illustrates to a larger scale a metal roll of the paper making machine and the plate in proximity to said roll with the paper web or sheet passing there-between,

Fig. 3 illustrates a modification of the invention, and

Figs. 4, 5 and 6 further modifications.

Referring to Fig. 1, (1) indicates a valve oscillator of usual form whose anode is connected through condensers (C_a) and (C_b) to the grid of a rectifying valve (2). The plate of the rectifying valve is connected to indicating means such as a galvanometer (3). (4) is a metal roll of a paper-making machine. (5) is the paper web and (6) is a metal plate which is shaped on its under surface to conform to the shape of the roll and which bears on the paper web. The plate is pressed into contact with the paper by a spring controlled arm (9) pivotally mounted on a support (10). The arm (9) is of insulating material such as fibre, or is insulatingly mounted. The arrangement of the roll (4) and plate (6) is shown more clearly in Fig. 2. The planes of opposite edges, e.g. (11) and (12), are such that wear of the plate will not cause variations in the surface area and are bevelled to assist the passage of the paper under the plate.

A plurality of such plates may be arranged to cooperate with the roll and means provided such as levers, eccentrics or other mechanism to withdraw them from or replace them on the roll as desired. The plates may be insulated from each other or connected electrically to form a single condenser. The plate (6), metal roll (4) and paper web (5) form a condenser whereof the dielectric is constituted by the paper (5) and said condenser is connected at one side to the junction of the condensers (C_a) and (C_b) and at the other side to earth, the metal roll of the paper making machine constituting the earth connection. An inductance (L_a) is connected in parallel with the condenser (4), (5), (6), for the purpose of preventing the accumulation of static electricity.

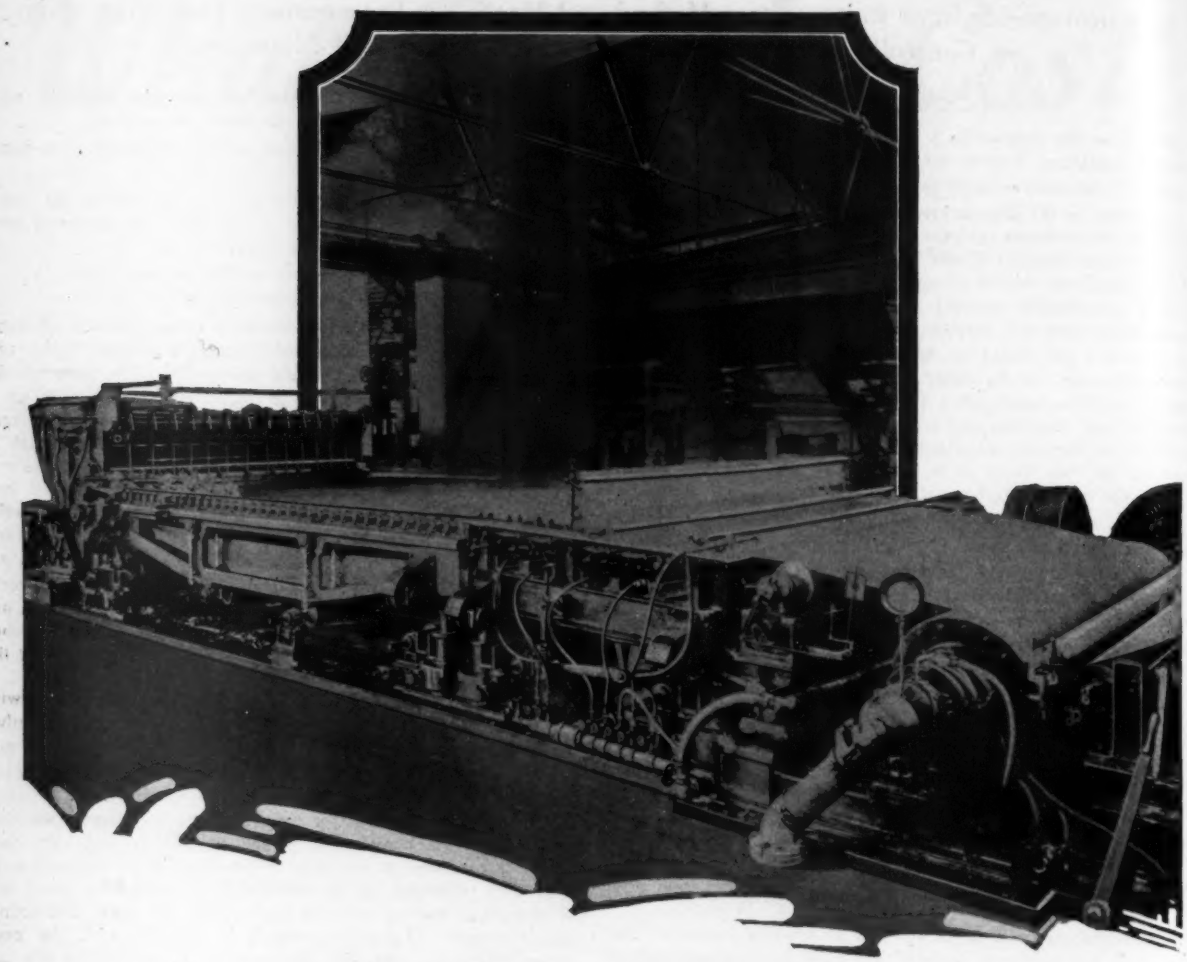
The filaments of the rectifier and oscillatory valve are connected to earth through the condenser (C_d).

(C_c) is a variable test condenser which may be connected in the circuit in place of the condenser (4), (5), (6), by the switch (7). (R_a) is a resistance shunt for the galvanometer and said shunt may be variable. (R_b) provides a small current bias to the galvanometer (3) opposing the steady plate current through the instrument, and the resistance (R_c) is provided to reduce such current to the amount required.

The condenser (C_e) is provided to by-pass any radio frequencies and usually may be omitted.

The parts of the apparatus may be enclosed in an earthed casing to prevent stray capacity effects.

The operation of the apparatus is as follows. With the switch (7) in the position connecting the condenser (4), (5), (6), to the valve oscillator 1, the oscillations produced pass to said condenser and to the rectifier (2) and the current passed to the galvanometer (3) is a measure of the current passed to the rectifier. Any change in the substance, thickness or moisture content of the paper coming from the machine will cause an alteration in the capacity of the condenser (4), (5), (6), whereby the condition of the electrical circuit is varied, that is the current passed to the rectifier (2) will be varied with a consequent variation in the reading of the galvanometer (3). The variation in the reading of the galvanometer (3) immediately draws attention to the change in the paper so that the operating conditions may be readily controlled and a uniform product obtained.



Old Equipment cannot meet present day Requirements

Mills struggling along under the handicap of antiquated equipment are "penny wise and pound foolish." It is said that "a good workman never complains about his tools," but it is apparent that a good machine tender cannot make money for you if he is troubled with maintenance, petty adjustments, broke, etc. Avoidable losses nullify profits.

The illustration shows the new Wet End of a book paper machine at the Jessup & Moore Paper Co., Wilmington, Del. This Keystone Removable, Adjustable, Shakeable Fourdrinier Part is used with the driers and finishing equipment of a machine, which has been operating many years.

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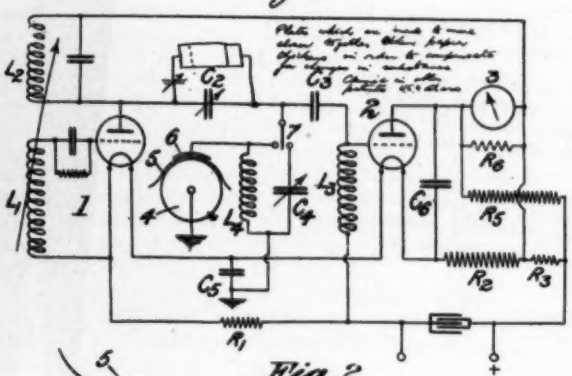
The condenser (C_4) is of known value and constitutes a test condenser. By moving the switch to substitute it for the condenser (4), (5), (6), the operation of the circuit may be tested and the galvanometer (3) calibrated. This condenser is preferably set so that when connected into the circuit its reading will be that which should be obtained when the paper is of the required quality.

In place of the galvanometer (3) a recording instrument may be employed which may be arranged to record alternately readings with the condenser (4), (5), (6), connected into the circuit and with the condenser (C_4) connected into the circuit. The variation of the curve produced when the condenser (4), (5), (6), is connected into the circuit from the curve produced by connecting the condenser (C_4) into the circuit is a measure of the variation in the quality of the paper from the required quality. Such an arrangement is embodied in the form of the invention illustrated in Fig. 6.

With the arrangement shown in Fig. 1, voltage variations of the mains produce a proportionate variation of the bias current through the galvanometer (3), and also of the current through (R_1) with a consequent variation of the negative bias on the

Fig. 1.



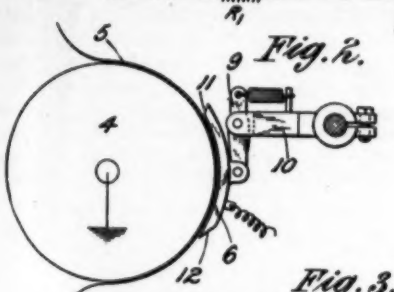
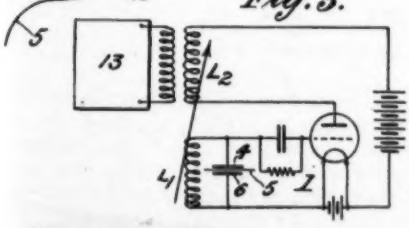


Fig. 2.

Fig. 3.



valve (2). The variations in the voltage of the mains also produce variations in the anode currents of the valves and their filament emissions. The two sets of effects thus due to variation in the voltage of the mains are opposed and by suitable adjustments of the resistances (R_1), (R_2) and (R_4) the effect on the galvanometer reading of small variations of the voltage may be reduced to a minimum or entirely eliminated.

It is found that the coupling between the coils (L_4), (L_2) also may be so fixed that automatic compensation of small voltage variations of the mains is provided.

In a modified arrangement of the circuit shown in Fig. 1, the condensers (4), (5), (6), and (C_4) and the inductance (L_4) may be connected in place of the condenser (C_2), and the plate of the valve (1) connected to earth.

Fig. 3 shows a modification of the invention in which the paper condenser (4), (5), (6), is connected in parallel with the

Fig. 4.

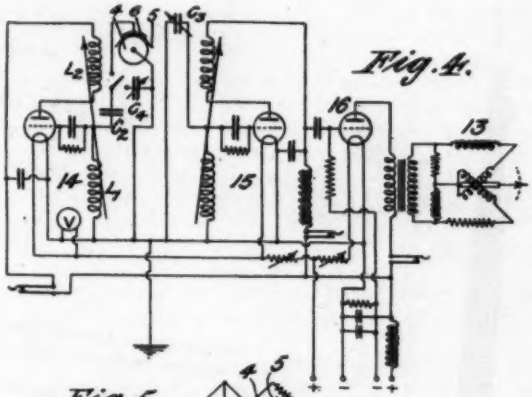


Fig. 5.

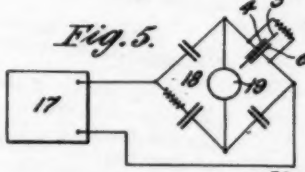
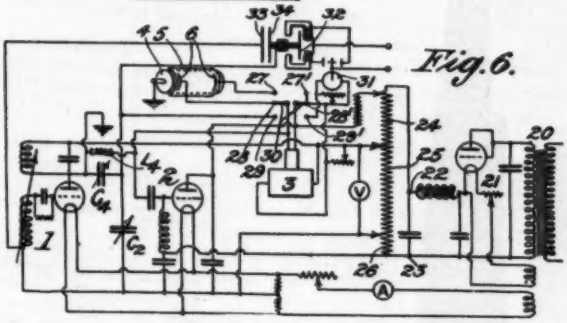


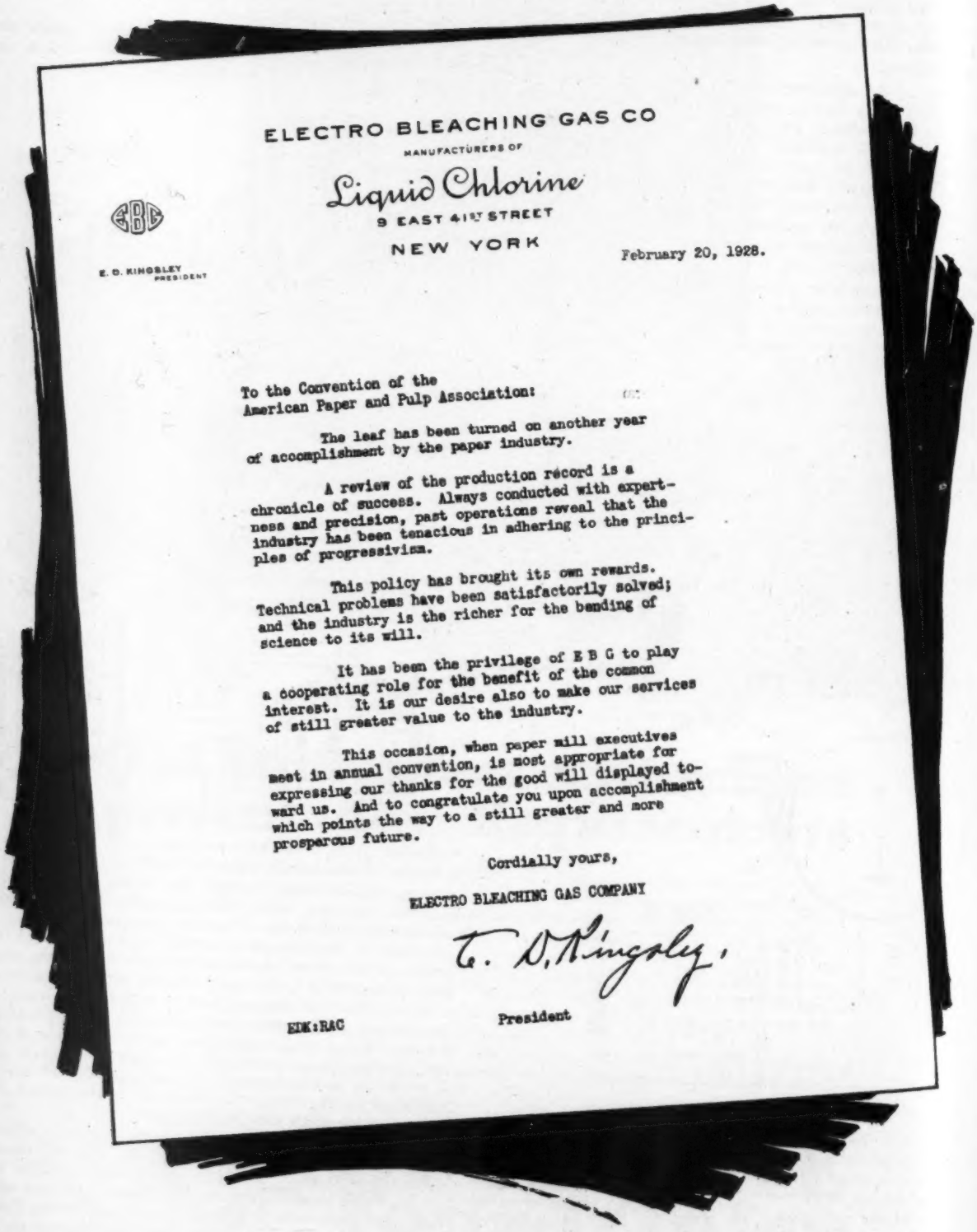
Fig. 6.



inductance (L_1) of the valve oscillator (1). In this case the condition of the circuit which is varied by a change in the value of the condenser (4), (5), (6), is the frequency of the oscillations in the circuit. The condition of the circuit is measured or indicated by a frequency or wave meter (13).

Instead of the frequency meter (13) a plurality of tuned circuits having their natural periods differing slightly may be placed in proximity to the main oscillating circuit. One or other of these circuits will then be caused to oscillate in resonance with the frequency of the main oscillatory circuit. By connecting an indicator device, such for example as a neon lamp, in each of the tuned circuits an indication will be obtained of which circuit is oscillating and consequently of the frequency of the main oscillatory circuit whereby an indication of the quality of the material under test is obtained.

Referring now to Fig. 4, (14) indicates a valve oscillator of usual form with the paper condenser (4), (5), (6), connected across the coil (L_4). (15) is a second valve oscillator having a frequency approaching that of the oscillator (14) and which is heterodyned therewith to produce a beat note of the difference in frequencies of the two circuits. An alteration in the value of the condenser (4), (5), (6), produces a change in the fre-



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February 20, 1928.

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The leaf has been turned on another year of accomplishment by the paper industry.

A review of the production record is a chronicle of success. Always conducted with expertness and precision, past operations reveal that the industry has been tenacious in adhering to the principles of progressivism.

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It has been the privilege of E B G to play a cooperating role for the benefit of the common interest. It is our desire also to make our services of still greater value to the industry.

This occasion, when paper mill executives meet in annual convention, is most appropriate for expressing our thanks for the good will displayed toward us. And to congratulate you upon accomplishment which points the way to a still greater and more prosperous future.

Cordially yours,

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quency of the oscillatory circuit (14) whereby the beat note is immediately varied. The beat note voltage is amplified by the amplifier (16) and its frequency measured or indicated by the low-frequency frequency meter (13).

In Fig. 5, (17) indicates a tuning fork controlled valve oscillator to give a constant frequency. This frequency is applied to a capacity bridge indicated at (18) wherein the paper condenser (4), (5), (6), constitutes one arm. (19) is an indicating or recording instrument which will show a variation of e. m. f. across the points of the bridge to which it is connected. Attention in the capacity of the condenser (4), (5), (6), will produce an alteration in the e. m. f. between the points at which the indicator (19) may comprise a thermo-galvanometer or a vibration galvanometer. Any type of capacity bridge may be employed and if desired the changes of e. m. f. between the points of the bridge at which the indicator (19) is shown connected in the diagram may be amplified.

In Fig. 6 the apparatus is similar to that shown in Fig. 1. (1) is the valve oscillator and (2) the restifying valve. (4), (5), (6), is the paper condenser of which (4) is the roll of the paper making machine and (6), (6), two plates mounted in proximity thereto. The indicating apparatus (3) comprises a thread recorder of known type which will automatically record the current passing through a number of separate circuits. The instrument includes an indicating arm or pointer which moves over a chart, and a plurality of different colored threads mounted on a frame which is moved by clockwork to bring them one at a time under a member which is then depressed by clockwork to engage the pointer and press it onto said thread to produce a mark on the chart. As each thread is brought under the operating member a particular circuit is connected to the instrument and thus an indication is given on the chart of the current passing through that circuit. The instrument in the present case is employed so as to connect one condenser plate (6), the other condenser plate (6), or the test condenser (C_4) into the circuit between the valve (1) and the valve (2).

The plates (6), (6), and the test condenser (C_4) are connected to contacts (27), (28) and (29) respectively. The indicating instrument (3) is connected directly to contacts (27^1) and (28^1) and through a relay 31 to a contact (29^1). Movable contacts (30) operated by movement of the frame or the mechanism moving the frame engage the contact (27) and (27^1) or (28) and (28^1) or (29) and (29^1) to connect one of the plates (6), (6), through the valve 2 to the instrument (3) or the test condenser (C_4) through the valve (2) and a relay (31) to the instrument (3).

The relay (31) is arranged to connect a motor (32) into a circuit and said motor operates to vary the relative positions of the plates (33), (34) of an adjustable condenser connected across the condenser (C_4). The relay is set so that it is in a neutral position, i. e. the motor (32) is disconnected, when the current flowing through it and the instrument (3) is that which should flow through the instrument (3) when the paper passing under the plates (6) is of the required quality; such is referred to as the "standard" current. The arrangement is such that if a condition, such as the supply voltage, or temperature, or other condition, has altered to cause the current to vary from the standard current, the relay will operate to connect the motor whereby the position of the plates (33), (34) of the condenser will be altered to adjust the circuit to compensate for the altered condition.

The circuit is shown supplied from alternating current mains through a transformer (20) and (21) is a rectifying valve connected to said transformer. The high tension voltage supplied by the rectifier (21) is applied to the points (22), (23) across which are connected the resistances (24), (25) and (26) in series. The resistance (24) provides a small bias current through the indicating galvanometer (3), the resistance (25) provides for the high tension to the valves (1) and (2) and the resistance (26) provides the negative bias for the valve (2).

It will be understood that the compensating device illustrated in Fig. 6 may be applied to an arrangement having a direct current supply.

Though the invention has been described as applied to a continuous web paper-making machine it will be understood that the condenser (4), (5), (6), may be a separate structure which is added to a paper making machine or which is used apart therefrom. In the latter case samples of paper will be placed between the parts (4) and (6) constituting the plates of the condenser, and both of which may be plates, and an indication of the quality of the paper obtained. Other materials than paper may be tested. The indicator may be calibrated by substituting a sample of the same material of standard thickness.

Various modifications may be made without departing from the invention. For example, other means of producing the electrical oscillations may be employed than a thermionic tube, such as a high frequency generator or an arc generator. In place of or in addition to the indicating devices for use on a paper making machine an electrical relay, such as the relay (31) shown in Fig. 6, may be connected so that when the quality of the paper varies from that required a circuit is closed by means of which an audible or other warning is given or means such as a steam valve is operated to control the manufacture of the paper. The plate or plates (4) may be of other shape than rectangular, e. g. diamond shape, round or elliptical. In the arrangement shown in Fig. 1 the valve (1) may be given a negative grid bias.

Permanence of Paper

By Dr. Th. C. Bentzen[1]

The term "permanence" indicates, with respect to writing paper, the quality of durability which is demanded for such paper, wherein it shall be able to resist the influence of nature or extreme climatic and atmospheric conditions for unlimited lengths of time. Such qualities are necessary for paper which, for instance, shall be used for important documents and records in hand writing or in print.

One of the outstanding conditions for the manufacture of such high grade papers is the use of rags as a raw material.

More than fifty years ago when I entered into operation as a paper mill chemist, rag was still (as it had been unchanged through generations) the only fiber material which went into the fibers contained in cotton and linen papers."

[1] Member, TAPPI; Chief Chemist, Whiting Plover Paper Co., Stevens Point, Wis.

beater for writing paper, and therefore this paper was still the same grade which H. P. Stevens, in his book *The Paper Mill Chemist*, characterizes "that has stood for centuries."

The annually increasing consumption of writing paper caused a severe scarcity of rags and made it imperative to find another cellulosic material which could serve as a substitute, or as an addition. This was partly attained through the invention of the sulphite process which, during the period 1870-1900, was improved and became practically serviceable. In spite of the continued skillful efforts to improve wood cellulose, it was still inferior to cotton cellulose due to its lack of strength and permanence. To quote Stevens, "such fibers as are isolated from wood, straw, esparto, etc., may not be found so lasting or permanent, even when as carefully prepared as the fibers contained in cotton and linen papers."

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Experiments of Kohler and Hall

At the Swedish Government Testing Institute in Stockholm a series of investigations was performed by S. Kohler and Gösta Hall to ascertain the relative durability (permanence) of writing paper made from different fibrous materials. A rather brief abstract of their report was reprinted in PAPER TRADE JOURNAL, April 8, 1926. Those who are interested and who understand the Swedish language ought to read this report in full. It is published as "Statens Provningsanstalt, Meddelande No. 28, Stockholm, 1925," and may be obtained through Albert Bonniers Publishing House, 561 Third Avenue, New York.

It would take too much time to quote all that is of value in this report and I shall therefore only refer to what are stated to be facts, proven through the exact, detailed investigations.

Page 66—"Through the addition of sulphite cellulose to rag in the manufacture of paper, the permanence evidently decreases in proportion to the quantity of the sulphite cellulose added. It must therefore be regarded as unwise to add sulphite cellulose to paper of importance, which shall be kept for all times."

Page 67—"In the case where comparatively good permanence is demanded of paper for less important documents, mixing of rag and sulphite cellulose may be considered to be satisfactory."

Page 83—"The paper made from bleached sulphite cellulose, both under light and heat, was weakened as regards its folding strength, much more rapidly than corresponding paper made from rags."

Page 84—"For which reason it must be considered proven that paper made from bleached sulphite cellulose possesses less durability over a long period of time."

As you see, Stevens' experience of 1907 has been confirmed through Gösta Hall's experiments of about twenty years later.

But, durability is not the only quality which makes rag stock preferable to wood pulp. Original strength is as important as the quality of permanence and every paper maker knows that the higher proportion of rag stock a paper contains, the stronger it is. To prevent misunderstanding of any kind I must point out that in comparing rag stock with wood pulp it is necessary to consider new, high grade cotton and linen rags rather than old or inferior materials. Likewise high grade wood pulp is referred to.

Alpha Cellulose of Rags and Wood Pulp

The theory that the strength of a fiber material depends upon its alpha cellulose content proves to be correct only insofar as fibers of the same origin are concerned. It is a well known fact that paper made from linen is stronger than that made from cotton (see "Paper Qualities" by Dr. Jessie E. Minor, PAPER TRADE JOURNAL, September 29, 1927), and paper made from these fibers are stronger than those made from wood pulp. This can, as far as I can see, only be accounted for as follows: that the alpha cellulose of the rag fibers is more capable of resistance to the folding and tearing test than is the alpha cellulose of the wood pulp fibers. The results of the following experiments will show this.

A certain shipment of sulphite pulp, designated as "high grade," with a content of 85 per cent alpha cellulose, according to its copper number, gave a very poor result with respect to strength. A sample of the same pulp was then tested after the mercerization method and gave as a result only about 60 per cent alpha cellulose in the form of fibers, and about 25 per cent passed through the filter as amorphous matter. It still had the quality of alpha cellulose inasmuch as it could not be dissolved in alkali solution. It may be regarded as a part of the alpha cellulose which changed its form from fibers into colloids, for which reason I propose to designate it as colloidal alpha cellulose.

From this experiment we learn:

1. That a wood pulp may, as in this case, contain 85 per cent alpha cellulose, but that without our knowing 25 per cent and perhaps sometimes still more of this cellulose is worthless as papermaking material; and

2. That the copper number method for testing cellulose is very unreliable.

Now, a series of mercerization tests was made using samples of different shipments of rags (new denims) and the average result was 98.5 per cent alpha cellulose with no "colloidal cellulose" indicated by test.

Furthermore, to demonstrate the contents of alpha cellulose of high grade cotton rags compared with that of chemically pure cotton, I shall refer to an experiment about which I reported in the paper I had the honor to read at the TAPPI convention in 1926 (reprinted in PAPER TRADE JOURNAL, February 25, 1926). According to this chemically pure cotton contained 99.3728 per cent alpha cellulose and a sample of high grade cotton rags 98.6000 per cent alpha cellulose. Difference of only 0.7728 per cent alpha cellulose.

From these experiments we learn that rag pulp in contrast to wood pulp possesses a certain physical quality of strong chemical resistance, which prevents it from changing into colloidal cellulose, and it is easy to understand that it is this special quality which will prevent the rag cellulose from breaking down on its way through the driers. In other words, it has the quality of "permanence."

Rag Content and Permanence

The following experiment will show that the higher percentage of high grade rags a paper contains, the higher its classification with respect to permanence, and vice versa. The papers in question for this experiment were all manufactured on the paper machine and all three had the same weight, the very same degree of sizing, and were made of the same high grade of materials, but in different proportions.

	85% rag and 15% wood pulp Direction		25% rag and 75% wood pulp Direction		15% rag and 85% wood pulp Direction	
Result of folding test.....	—	x	—	x	—	x
Original paper	626	498	106	29	32	18
Same paper after having been exposed to 100 degrees C. for 20 hours..	601	468	71	17	20	3
Breakdown	4%	6%	33.5%	41.4%	37.5%	83.3%

Quality of Rags

It has been claimed that rags, due to modern laundry, are of inferior quality than in past years. It is possible that this is true with respect to old rags, but for the manufacture of high grade writing paper only new rags of high quality are used.

I placed this question before one of the most important rag graders in this country and received from him the following answer:

"In reply beg to advise that rags as material have not suffered a debasement in quality during the last ten or twenty years. A strictly cotton cutting is made from cloth in which a good grade of cotton is used, and certainly the quality of cotton today is just as good as it was at any time during many years past. We see no reason why the cotton crop of today as to quality would not be as good, or better, than it had been years ago, and naturally, therefore, a strictly cotton cutting is just as good in quality as ever."

Summary

Concluding this paper, I propose that the TAPPI Cellulose Committee place the problem of permanence in the front rank, and I therefore propose that our chairman form a sub-committee which may take care of this matter. This committee should not be formed with the intention of fighting the efforts of those pulp mills which are working on the improvement of wood pulp. It would be better for them to study developments in pulp making and report their conclusions in the Technical Section of the PAPER TRADE JOURNAL and at the meetings of the Technical Association. Of all questions and problems concerning writing paper, that of permanence is of paramount importance.

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Hydrogen Ion Measurements in the Pulp and Paper Mill*

By W. F. Hoffman [1]

One of the important tests or measurements made in the pulp and paper mill is the determination of the hydrogen and hydroxyl ion concentration in various liquors. This also applies to the various stages of the manufacturing process. It is of particular importance in that it differentiates between total or titratable acidity and actual or active acidity.

The importance of hydrogen ion determination measurements in the industries is being realized to a greater extent every day. One needs but glance through the technical literature of almost any industry to find reference after reference relating to or involving the use of such measurements.

Shaw[2] has made a study of the effect of hydrogen ion concentration upon the sizing of paper and Oman[3] has also studied the effects of the hydrogen ion concentration on this process. Buch[4] has published an article on hydrogen ion concentration and its measurement, explaining the terms hydrogen ion and pH and describing methods of measuring hydrogen ion concentrations, both electrometric and colorimetric. Taylor[5] has discussed the terms hydrogen ion concentration and pH, but he describes only the colorimetric method of measuring the hydrogen ion concentration. Franke[6] has recently done considerable work on the development of electrodes suitable for various pulp mill liquors, as well as studying the hydrogen ion concentration of these liquors. These are only a few of the references to the literature dealing with this subject, but they illustrate the growing appreciation of the importance of hydrogen ion measurements in the pulp and paper industry.

Simplicity of Electrometric Methods

This paper deals with the electrometric methods of measuring hydrogen ion concentrations. Non-technical men in general, and even many who are technically trained, regard this method of measuring hydrogen ion concentrations as being exceedingly difficult and too complicated for a technical laboratory. The reasons for this are probably the difficulties experienced by the pioneer workers in this field and the fact that many laboratories, both commercial and university, do not have modern apparatus for electrometrically determining hydrogen ion concentration. With modern equipment, which may be purchased from chemical supply firms, a non-technical man can be trained to make accurate routine electrometric hydrogen ion concentration measurements in a very short time, but should always be under the supervision of a trained chemist.

Active and Total Acidity

An attempt will be made to differentiate between the titratable and active acidity and their measurements without going into the involved mathematics and formulas usually found in textbooks on physical chemistry. To illustrate the difference between the active and total acidity acetic acid and hydrochloric acid will be used as examples.

A very dilute solution of hydrochloric acid, say 0.00001 N, (0.000365 grams of hydrochloric acid per liter) has an acidity coefficient, for all purposes, of 1. This is often designated, especially in the older literature, as the ionization or dissociation constant. An activity coefficient of 1 means that all of the hydrochloric acid is present as active hydrogen ions and active chlorine ions. In a much stronger solution of hydrochloric acid, say 0.01 N or 0.365 grams of hydrochloric acid per liter, the activity coefficient will be slightly less than 1, that is, not quite all of the hydrochloric acid will be present as active hydrogen ions and active chlorine ions. Comparing acetic acid with hydrochloric acid we find that even a very weak solution of acetic acid in water has an activity coefficient of considerably less than 1, and the more concentrated solutions have an active coefficient of only a small fraction of 1.

If we have a solution of 0.01 N hydrochloric acid and a solution of 0.01 N acetic acid, it will require the same amount of standard sodium hydroxide to neutralize both of these acids using phenolphthalein as an indicator. Thus, they have equal "titratable acidity." However, in comparing these two solutions, it is common practice to say that the hydrochloric acid solution is a strong acid and the acetic solution is a weak acid, in spite of the fact that they both require the same amount of sodium hydroxide for neutralization. The actual difference between these two acid solutions is that the hydrogen and chlorine of the hydrochloric acid are present, to a large extent, as active hydrogen ions and active chlorine ions, while in the acetic solution only a small proportion of the potential hydrogen and acetate groups is present as active hydrogen ions and active acetate ions.

From the foregoing illustration it is evident that the active acidity cannot be measured by titration. To determine this active acidity the hydrogen ion concentration must be measured.

pH and pOH of Neutral Solutions

When we have a solution which is truly neutral the concentration of the hydrogen ions and hydroxyl ions is equal. In a neutral water solution the concentration of hydrogen ions is 10^{-7} gram moles per liter[7], and of hydroxyl ions is 10^{-7} gram moles per liter. It is usually preferable to express the values as ion exponents rather than to work with ion concentrations.

The term pH represents the hydrogen exponent and pOH represents the hydroxyl exponent. This symbol for the hydrogen ion concentration or hydrogen exponent is known as the pH value, and is the logarithm of the reciprocal of the gram ionic hydrogen equivalent per liter, namely $pH = \log \frac{1}{H^+}$ per liter.

The same holds for the hydroxyl ion concentration or the hydroxyl exponent as will be shown below. Pure water has a hydrogen ion concentration of 10^{-7} and of hydroxyl ion concentration of 10^{-7} moles per liter or pH7. If we express the ion exponents or activity of water by pW (pH=7 and pOH=7) then, at room temperature

$$pW = pH + pOH = 14$$

Then we have,

$$pH = 14 - pOH$$
$$pOH = 14 - pH$$

Thus it is readily seen that if the pH is known we can calculate pOH directly and conversely. The reaction of the liquid in terms of ion exponents is:

pH=7=pOH is a neutral solution.
pH<pOH is an acid solution.
pH>7>pOH is an alkaline solution

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* Paper No. 2 from the chemical laboratory of Northwest Paper Company. Cloquet, Minn.

[1] Northwest Paper Co., Cloquet, Minn.

[2] Shaw, M. B.—Paper Trade Journal 81, No. 10, 59-62 (Sept. 3, 1925).

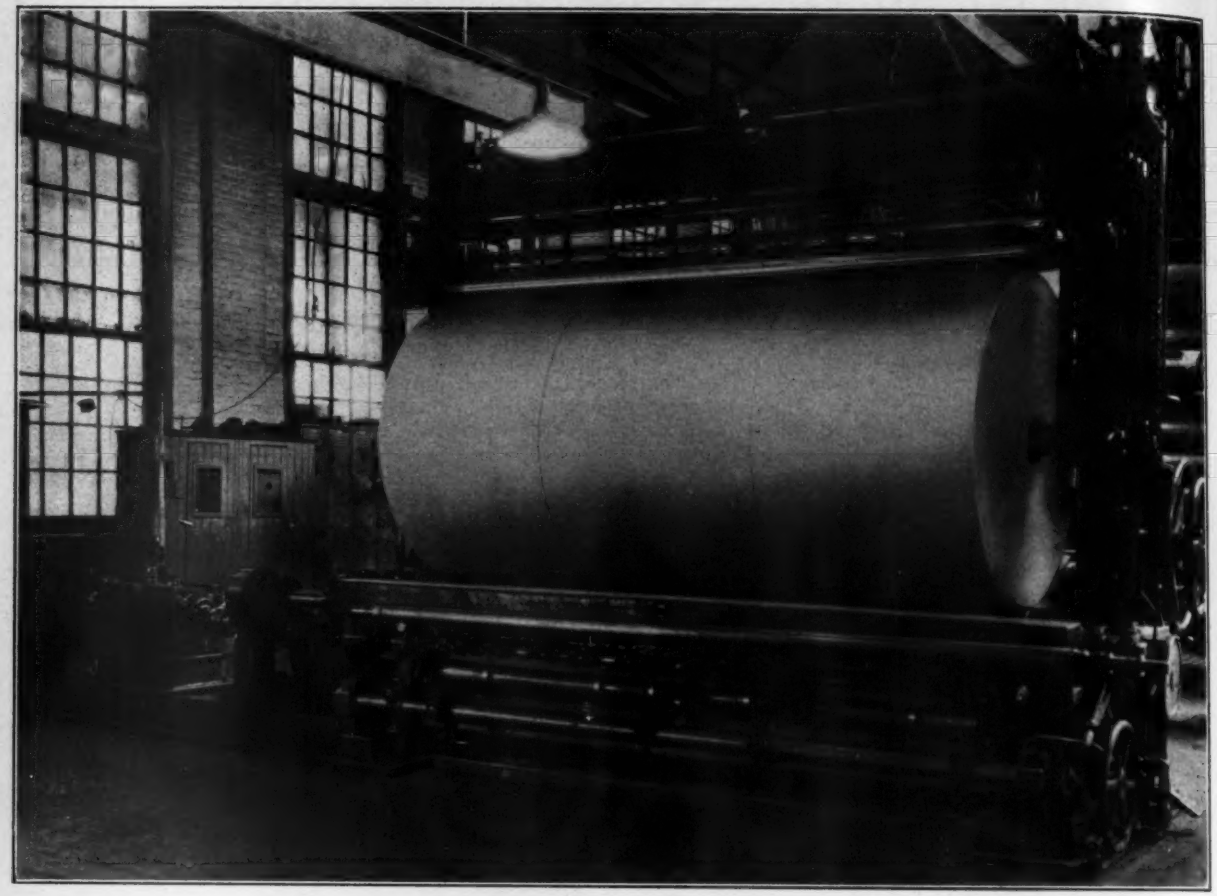
[3] Oman, E.—Papierfabricant 25, 436-440 (1927).

[4] Buch, K.—Pappers-och Travarutidskrift for Finland 22, 648 (1926).

[5] Taylor, W. A.—Industrial Engineering Chemistry 19, 999-1004 (1927); Technical Association Papers, Series IX, No. 1, 38-43 (1926).

[6] Franke, K. W.—Ph.D. thesis, University of Minnesota, June, 1927. A paper based on this thesis is in press in Industrial Engineering Chemistry.

[7] 10^{-7} equals 0.0000001 gram of hydrogen ions in one liter of volume. This is the hydrogen ion concentration often expressed as $CH = 10^{-7}$ or as $H^+ = 10^{-7}$.



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In terms of ion concentrations we have,

$[H^+]=[OH^-]=10^{-7}$ neutral reaction.

$[H^+]>10^{-7}>[OH^-]$ is an acid reaction.

$[H^+]<10^{-7}<[OH^-]$ is an alkaline reaction.

If we use hydrochloric acid and sodium hydroxide (assuming an activity coefficient of 1) we have in 0.0001 M solution of hydrochloric acid,

$$[H^+]=10^{-4} \text{ hence } pH=3.$$

In this solution,

$$pOH=14-3=11$$

and,

$$[OH^-]=10^{-11} \text{ the reaction is acid.}$$

In a 0.001 M solution of sodium hydroxide (assuming an activity coefficient of 1)

$$[OH^-]=10^{-3} \text{ hence } pOH=3.$$

In this solution,

$$pH=14-3=11,$$

and,

$$H^+=10^{-11}, \text{ the solution is alkaline.}$$

The Purpose of the "Buffer"

Before continuing with a description of the measurements of the hydrogen ion concentration the term "buffer" must be understood. Chemical compounds or a solution of chemical compounds are designated as "buffers" when they prevent sudden and great changes in the hydrogen ion concentration when strong acids or strong bases are added to a system. Weak acids and salts of weak acids or weak bases and salts of weak bases are buffers. Sodium phosphate is a salt of such a weak acid, and therefore a buffer. If an equivalent of 0.1 normal hydrochloric acid is added to an equivalent of sodium phosphate, we have

$$Na_3PO_4+HCl=NaCl+Na_2HPO_4$$

The strong hydrochloric acid is buffered by the sodium phosphate and the resulting acid is the very weak acid disodium phosphate which has a pH of about 8.5 in contrast to a pH of 1 of the hydrochloric acid,

When another equivalent of the hydrochloric acid is added, we have,

$$Na_2HPO_4+HCl=NaCl+NaH_2PO_4$$

Again, the pH of 1 of the strong hydrochloric acid is reduced to about pH of 6 by the buffer action of disodium phosphate.

If another equivalent of the strong hydrochloric acid is added to the system,

$$NaH_2PO_4+HCl=NaCl+H_3PO_4,$$

the pH of 1 of the strong hydrochloric is reduced to about pH of 2.5 by the buffer action of the sodium dihydrogen phosphate.

Another illustration is the addition of an equivalent of 0.1 normal hydrochloric acid to a solution of sodium carbonate which is the salt of a weak acid,

$$Na_2CO_3+HCl=NaHCO_3+NaCl.$$

Here the pH of 1 of the strong hydrochloric acid has been reduced to about pH 8.0 by the sodium carbonate.

The addition of another equivalent of hydrochloric acid results in,

$$NaHCO_3+HCl=NaCl+H_2CO_3, \text{ and}$$
$$H_2CO_3=H_2O+CO_2$$

Again this does not cause a great change in the pH of the system as the pH of 1 of the strong hydrochloric acid is reduced to about pH 5.5.

Starting again with the 0.1 molal solution of sodium carbonate which has a pH of about 10.0 (alkaline to phenolphthalein) and add to it 0.1 hydrochloric acid, the pH of the system will not change to any appreciable degree until at least an equivalent amount of hydrochloric acid solution has been added. Then the sodium carbonate disappears and sodium bicarbonate is formed. The system now has a pH of about 8.0 (acid to phenolphthalein).

Further addition of hydrochloric acid does not appreciably change the pH of the system until another equivalent of hydrochloric acid has been added, then the pH drops to approximately 5.5. Now the addition of even a small excess of hydrochloric acid will cause a marked decrease in the pH of the system because there is no buffer solution left. The sodium chloride which remains, being a salt of a strong acid and strong base, has no buffering power, and, consequently, an addition of only a small amount of hydrochloric acid will radically change the pH of the system.

Reaction Between Strong Base and Weak Acid

The same reaction holds for the addition of an alkali to a weak acid. A 0.1 M. solution of carbonic acid has a pH of about 5.5. If an equivalent of 0.1 M. solution of sodium hydroxide is added to this we have,

$$H_2CO_3+NaOH=NaHCO_3+H_2O$$

The pH of about 13 of the strong sodium hydroxide is reduced to approximately pH 8.0 by the buffer action of the weak acid.

When another equivalent of the sodium hydroxide solution is added, we have,

$$NaHCO_3+NaOH=Na_2CO_3+H_2O.$$

Again the pH of 13 of the strong sodium hydroxide is reduced to approximately pH of 10 by the buffer action of the sodium bicarbonate. Now if only a small amount of sodium hydroxide is added to this system the pH will increase to a considerable degree, due to the fact there is no longer a buffer action for the weak acid has been completely neutralized.

These illustrations have not only shown the effect of buffers, but also again emphasized the importance of knowing the hydrogen ion concentration of any liquors and systems in a pulp and paper mill. Two solutions may be of equal strength when tested for total acidity (neutral to phenolphthalein) but, taking an extreme case one may have a pH of 2 and the other a pH of 7, or two solutions may have the same pH but one may have ten times as great titratable acidity as the other.

Measurement of Hydrogen Ion Concentration

The measurement of the hydrogen ion concentration or conversely of hydroxyl ion concentration are accomplished by one of two methods; namely, by the use of indicators and by electrometric measurements. Both methods have certain advantages, but for most purposes the advantages of the electrometric measurements far outweigh its disadvantages, even allowing for certain advantages of the colorimetric method.

The Colorimetric Method

The colorimetric method of measuring the hydrogen ion concentration is based on the use of indicators. These are compounds which change color at some particular hydrogen ion concentration. This change is not sharp, but a gradual change of color takes place. A certain indicator is added to a solution and the color compared with standard colors produced by the same indicator in a solution whose hydrogen ion concentration is known. This method as applied to pulp and paper mills has been described in detail by Taylor[5]. There are numerous sources of errors in using the colorimetric method for measuring hydrogen ion concentrations. In the first place the standard solution must be correct. The personal factor in comparing shades of color always has to be taken into consideration. In the actual determination itself we have (1) a possibility of some constituents of the solution reacting with the indicator, (2) a turbid solution which makes comparing difficult, (3) the possibility that the solution to be tested is colored, and, (4) that the indicator is adsorbed on colloidal particles in the solution to be tested. However, this method of determining the hydrogen ion concentration does afford a rapid and convenient method of at least, approximating, the hydrogen ion concentration of a great many liquors and solutions in the pulp and paper mill.

The Electrometric Method

Several volumes have been written describing the electrometric method of measuring the hydrogen ion concentration. For a detailed description of the method, both theoretical and practical, the reader is referred to such books as those written

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by Clark[8], by Kolthoff and Furman[9], and by Michaelis[10], as it is not the purpose of this paper to go into the theory of electrometric measurements. Apparatus has been developed by means of which the mill chemist can train in two or three hours a non-technical man to make perfectly accurate routine hydrogen ion concentration measurements. Such an arrangement will conserve the time of the mill chemist and leave him free for a larger field of supervision of the plant processes and the interpretation of the hydrogen ion measurements in terms of the mill operation. Such apparatus is listed and described by the leading chemical supply houses. For almost all technical uses a well built potentiometer with the scale reading in millivolts as well as pH can be purchased at a very reasonable price. All that is needed besides this is a half cell and electrodes. For the half cell a calomel electrode is usually used. They are very accurate, stable and possess the added advantage of being very easily reproduced. While either an N or O.1N calomel electrode is suited for this work, an N electrode is probably a little easier to maintain and reproduce accurately.

The Hydrogen Electrode

As an electrode for measuring the concentration of the hydrogen ions the so-called hydrogen electrode is usually employed. There are many types and shades of hydrogen electrodes, but these may be roughly divided into two groups, namely the bubbling hydrogen electrode and the shaking hydrogen electrode. Those belonging to the first class are recommended for electrometric titrations as it is possible to obtain a continuous record on the changes in the hydrogen concentration. The shaking type is recommended for use when the hydrogen ion concentration determination is made on a liquor or solution. Of those described by the leading chemical houses, the author recommends the Bailey electrode, as it is simple to use and readily cleaned. The author has made thousands of hydrogen ion concentration measurements on various kinds of liquids and solutions. Measuring the hydrogen ion concentration of ordinary liquids, such as plant sap, protein solutions, water, paper mill white water, and similar solutions, using a Bailey electrode, an average of 20 to 25 determinations can be made per hour. The results are as a rule reproducible to ± 0.5 millivolts, which represent a pH ± 0.001. Usually from fifty to one hundred determinations can be made with an electrode before it requires replatinizing, although as high as three hundred determinations have been made with one electrode before replatinizing.

The hydrogen electrode is applicable for measuring the hydrogen ion concentration of most solutions. However, there are certain types of substances which cause errors in the hydrogen ion concentration measurements when a hydrogen electrode is used. Oxidizing agents are reduced in the hydrogen electrode and, therefore, measurements cannot be made on solutions containing such compounds as ferro alum, bichromate of soda and nitric acid. Hydrogen electrodes cannot be used for determining the hydrogen ion concentration of solutions containing reducing substances. Metals which stand below hydrogen in the electromotive force series, and also lead, are reduced in the hydrogen electrode, and, therefore, interfere with the production of reliable results. It is also necessary that the hydrogen gas be pure as substances, such as hydrogen sulphide, hydrocarbons, etc., may "poison" the electrode. There are other electrodes, however, which may be used in such types of solutions and which will be described later.

In the pulp mill such liquors as those which contain sulphur dioxide and hydrogen sulphite belong to this class of substances which prevent accurate hydrogen ion concentration measurements with a hydrogen electrode. These compounds cause an error in the measurements which make the results questionable. When a solution is tested which may cause a poisoning of the hydrogen electrode, it is always important that the electrode be checked against a standard solution (preferably a solution of a "buffer") before and after using for the liquid in question. If the values obtained from several tests on the known solution are constant, and the electrode gives the same results with the standard buffed solution before and after using with the liquid in question, it is safe to assume that the electrode has not been poisoned, and that the readings obtained for this liquor are correct.

Other Types of Electrodes

Besides the hydrogen electrodes several other types of electrodes have been described. The most important ones are the oxygen and air electrodes, the higher oxide electrodes, the quinhydrone electrode, the metal electrodes, the tungsten electrode and the glass electrode. All of these electrodes are adapted to some special type of solution or to some definite pH range, but those belonging to the metal electrode group show the most promise for use with pulp and paper mill liquors. Of this group the antimony electrode has shown the most promise. Franke[9] has described the use of this electrode for measuring the hydrogen ion concentration of various pulp and paper mill liquors, and finds that the result obtained with it are, for certain solutions, much more accurate than when the hydrogen electrode is used. The solubility of the oxide of antimony is so small even in 0.1 N hydrochloric acid and in O.1 N sodium hydroxide that it does not change the hydrogen ion concentration of these solutions. The use of an antimony electrode will greatly simplify the determination of the hydrogen ion concentration in a great many mill liquors and solutions. The use of antimony electrode eliminates the requirement of hydrogen gas as well as providing an electrode which will give accurate results either in an oxidizing solution or in a reducing solution. The e.m.f. of the antimony electrode is not the same as that of the hydrogen electrode and, therefore, the conversion tables for the hydrogen electrode cannot be used for obtaining the pH figures from the millivolt readings of an antimony electrode. This electrode when functioning properly comes to equilibrium in two or three minutes. By using several electrodes this affords a very rapid method of determining the hydrogen ion concentration of a series of solutions.

Recording Potentiometers

Continuous recording potentiometers have been developed and are used where it is desirable to have a continuous record of the acidity or alkalinity for any particular solution over a period of time. These instruments may be used with any suitable type of electrode. Besides graphing the continuous record of the hydrogen ion concentration they may also be equipped with signals indicating that the hydrogen ion concentration of the solution has dropped below the desired point or is greater than that desired.

Applications

There are many places in the pulp and paper mill where hydrogen ion concentration determinations would be of value. We must admit that many of these steps in the manufacturing process in pulp and paper mills, and more especially in the paper mill, are dependent on the colloidal properties of the various constituents of the system. It is a proven fact that the hydrogen ion concentration of a solution plays an important role in its colloidal behavior. If a step in the manufacture of paper depends on colloidal behavior then it is especially important that the optimum hydrogen ion concentration for this particular reaction or step be found and then maintained at that point. The only way this can be accomplished is by measuring the hydrogen ion concentration and controlling it accordingly. The optimum hydrogen ion concentration for any particular process or solution in one mill may not necessarily be the optimum pH for a similar step in another mill.

[8] Clark, T. Mansfield.—Determination of Hydrogen Ions. Williams & Wilkins Co., Baltimore, Md. (1923).
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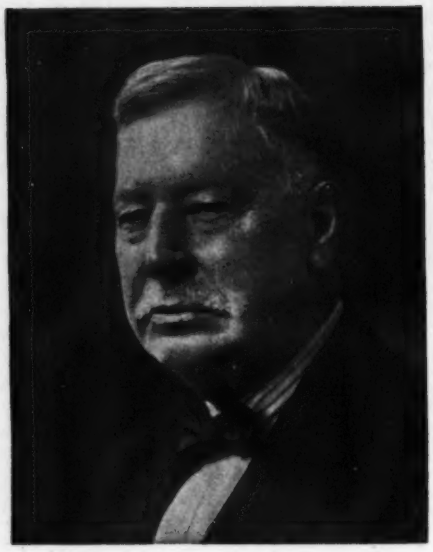

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There are so many variables entering into the manufacture of pulp and paper that the optimum pH will, undoubtedly, vary to some extent. The following list of steps and solutions on which a hydrogen ion concentration study would be profitable is not, by any means, completed. It is probable that not all of these suggestions would be profitable to carry out for any one mill. No attempt has been made to list these in order of importance, and this again would vary from mill to mill. It has been impossible, as yet, for our laboratory to carry out all of the hydrogen ion concentration studies as outlined below. Some have been studied, others will be in the near future, while still others are only suggestions.

WATER SUPPLY.—The water supply is important for any mill. The pH of the untreated water will vary from season to season. It is important to know when this change takes place and what effect, if any, these changes have on mill operations. In the filter plant the proper control of the hydrogen ion concentration of the filtered water is important. There is a certain pH zone in which the maximum precipitation and color removal will take place. If this is determined and maintained a more satisfactory operation of the filter plant will follow.

SULPHITE MILL.—The results of some of the more recent investigations on the sulphite cooking liquor are important. Certainly, if the cooking of wood with calcium bisulphite cooking liquor is asumed to take place in two distinct steps, namely hydrolysis and a sulphonating process, then the hydrogen ion concentration of the liquor plays an important part. The pH of the wash water has an effect on the efficiency of washing wood pulp. It is probable that the resins are more easily removed at certain hydrogen ion concentrations than at others.

SODA AND SULPHATE MILLS. In the soda and sulphate mill cooking liquors the caustic soda solutions are so strong that the hydrogen ion concentration determinations would be practically worthless. A study of the hydrogen ion concentration of the black liquor might be worth while. The pH of the wash water would have the same influence on the efficiency of the washing of the pulp as it would have in the sulphite pulp.

BLEACHING. We know that the acidity of a solution has a marked influence on the efficiency of bleaching. A study of the hydrogen ion concentration of the bleach solution to determine the optimum pH and then a study of the pH best suited for washing the bleached pulp would be worth while.

PAPER MANUFACTURE. The pH of the contents of the beaters and of the white water would be valuable information for any mill. We know that the absorption of clay, alum, size and dye by the fibers is a colloidal phenomenon. Adsorption is very markably influenced by changes in hydrogen ion concentration. "The characteristics of the adsorbed aluminum hydroxide may markably influence the adsorption of dye and rosin." Aluminum hydroxide will form and precipitate best only within certain limits of hydrogen ion concentrations.

The difference between total acidity and actual acidity is discussed. The importance of the latter in the pulp and paper industry is emphasized. Such terms as "buffer," "pH" and "ion activity" are described by illustrations. A brief discussion of the methods for measuring hydrogen ion concentrations, especially electrometric, is given. The Bailey hydrogen electrode and the antimony electrode are recommended for use in the pulp and paper mill. A list of the various steps and liquors in the pulp and paper mill, in which hydrogen ion concentration studies will be valuable is given.

Technical Control in the Ground Wood Mill

By R. J. Schadt[1]

Ground wood is today being made more scientifically than it was but a few years ago. The remarkable development of the paper machine capable of producing a very wide sheet at high speed is due in no small measure to the ability of the ground wood pulp manufacturer to make a product of predetermined specifications having the strength and freeness properties required of the news print sheet.

The present tendencies of grinder control seem to be toward a universal adoption of the freeness test. Although this test is used in most of the large modern ground wood mills, yet there are some that do not use it and still seem to obtain good results as to production and power consumption.

The fact that most of the mills are using the test, however, indicates that there is a distinct benefit derived from its use. At the present time there is a need for a standard freeness tester with a standard procedure. In the United States particularly, freeness tests on ground wood have been worked out in each individual laboratory until we have reached the time when freeness in one mill has a meaning not recognized by men in other mills. The tester used in one mill may be the same as that used in another but the consistencies and volumes used in making the tests give results that cannot be readily interpreted by chemists using different consistencies and volumes.

The freeness test should be a universal quality test for ground wood so far as its performance on the paper machine is concerned. A suggestion in this connection would be the development of a standard freeness tester or the general adoption of one already on the market, and a method of procedure in making the test should be worked out by the Forest Products Laboratory.

[1] Junior Member, TAPPI; Technical Department, Hawley Pulp & Paper Co., Oregon City, Ore.

The freeness test is not very reliable as a check on individual stone performance because it is difficult to obtain a uniform sample of stock that will give the desired information. Some mills use this test in connection with individual stones, but there is some question as to the real meaning of the results. The blue glass still seems to be the favorite and most reliable method of determining individual stone performance and pulp quality.

Some mills determine the consistency of the stock as it goes to the screens. The importance of this test is its value in controlling the degree of screening and the obtaining of maximum screening capacity.

One or two mills are using the horsepower per cord figure as a control test. This control can be used only by the few mills that have individual drives, but in these it gives satisfactory results. It is particularly useful in indicating stones that need attention.

Some mills are finding the continuous check on ground wood tailings a great help in keeping this loss at a minimum. This is done in large mills by collecting the material on wet machines. It is usually used for wrapper stock. Periodic checkups give good indications as to losses. Where changes are made in grinding or in quality of wood used, as well as changes in the screening system, tests should be made to see the extent to which tailings are formed. A continuous check on screen performance is worthwhile if it is not too expensive to maintain.

There are one or two instances of mills that determine their stone usage in terms of cubic inches of stone worn per cord of wood ground. In mills where there are weekly shutdowns or on magazine grinders that have stone gages, these measurements provide a good opportunity to determine at the start those stones that wear away most rapidly. This shows when it is necessary to change the sharpening procedure and to regulate the burrs so that the stones may give maximum production with minimum wear.

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Technical Problems in Waste Utilization and Stream Improvement

By C. M. Baker [1]

It would be folly for me, practically an outsider, to discuss technical problems in the manufacture of paper or even in the recovery of by-products from the wastes produced from the paper industry. You with years of experience in the industry are much better informed and more capable of discussing or taking up those problems than the speaker. This paper, therefore, will be confined to the technical problems involved in the effect of wastes upon streams and sanitary analyses of the wastes and water of the stream together with their application to the various problems involved.

Sanitary Significance of Pollution

From a public health standpoint bacterial pollution has the greatest significance. Such pollution, however, is confined almost entirely to that from the domestic sewage of municipalities. Paper mill wastes are not a factor in this type of pollution, although a few other industrial wastes such as from tanneries are, under certain conditions. Paper mill wastes, therefore, do not directly affect the public health, although they may cause such a condition in a stream as to create a nuisance, and thus indirectly affect health and comfort, particularly the latter, or they may so reduce the capacity of a stream to assimilate sewage pollution or so affect the water as to reduce the efficiency of water purification plants and thus endanger the public health. The principal factor in pollution from paper mills, therefore, is the effect upon the aquatic life of the stream, since if fish can live in the water a nuisance will not be created and the public health will be adequately protected except possibly in a few cases where water purification is involved.

Are fish more valuable than industry? In most cases no, but in many instances the value of fishing is a material asset. For instance it has been estimated that in Wisconsin the value of fishing in connection with the tourist trade is $10,000,000 annually. The value is probably as great in Michigan and some other states frequented by tourists. Then, too, the laws in most states are such that the riparian rights of owners below are carefully protected so that damages may be assessed by the Courts,—as was the case in recent Michigan litigation,—even though the industry may not be enjoined from discharging its wastes into the stream. The paper industry, however, fully realizes the importance of the problem so that further discussion along this line seems unnecessary.

The public, uninformed, usually believes practically all wastes from industries are toxic or poisonous to fish or other aquatic life. Such, however, is seldom the case. Probably the only toxic waste from the paper industry is chlorine used in bleaching processes. So far as the speaker knows, however, there is no instance where this waste has been discharged into streams in sufficient concentration to be deleterious in its effect. In any event although this waste may, if in sufficient concentration, cause the death of fish, it would also cause the death of disease germs and thereby tend to improve the stream from the public health standpoint.

Sediment, such as suspended solids from domestic sewage and packing plant wastes, fibers from paper mill wastes, and other suspended materials that settle to the bottom of the stream are factors in stream pollution. Fiber wastes from the paper industry are practically stable, but in settling they may carry organic matter with them to the bed of the stream which later in decomposition tends to reduce the dissolved oxygen of the water, particularly in the lower strata. Furthermore, sediment of all kinds forming in the bed of the stream may interfere with the spawning and propagation of fish. Some contend that fiber wastes lodge in the gills of fish and interfere with their breathing process. However, there is no definite nor scientific substantiation of this contention.

The greatest factor in the general problem of stream pollution by industrial waste is its oxygen demand in the natural process of oxidation or nitrification of the organic matter. In the natural process of breaking down, or decomposition, of nitrogenous organic matter there is first a reduction of the vegetable or animal material by certain classes of bacteria which may operate in the absence of air. The first reduction is to ammonia compounds, indicated in chemical analyses as free and albuminoid ammonias. Then another class of organisms known as nitrifying bacteria, which require air to function properly, oxidize the organic matter to the nitrate state. The nitrates then become plant food or fertilizer for vegetation and are again taken up by the plants, which in turn may be consumed by animals, thus completing the cycle. When nitrogenous organic wastes are discharged into a stream this decomposition takes place with the resultant formation of nitrates or plant fertilizer. Since this process is one of oxidation the dissolved oxygen in the water of the stream is utilized to supply the demand.

Sanitary Analyses

The technique of sanitary analyses of sewage, industrial wastes, and streams, is described in detail in "Standard Methods of Water Analyses," American Public Health Association. This procedure has been developed primarily for public water supplies and domestic sewage and therefore frequently needs modification in its application to industrial wastes. There is need for more definite standardization of analytical procedure in connection with industrial wastes. It follows from the preceding discussion, however, that the most significant analyses with reference to stream pollution by pulp and paper mill wastes are those relating to total, suspended and volatile solids, to the oxygen demand of the waste and the dissolved oxygen present in the stream. While other sanitary analyses are frequently made they are of little importance in the problem under consideration, and therefore will not be included in this discussion.

Determination of Solids

Total and suspended solids are determined by evaporation to dryness and weighing measured quantities of a sample before and after passing through a filter. The difference between the weights thus obtained represents the amount of suspended matter. The weight of the unfiltered portion represents the total solids. If the heating is continued to a dull red temperature, the organic matter is ignited and driven off. Only the mineral residue remains. The loss in weight occasioned by the removal of the organic matter is termed loss of ignition, or volatile matter. It thus becomes a measure of the total organic content of the sample.

In sanitary practice it is customary to express results in parts per million, by weight, but fiber losses in the pulp and paper industry are usually expresssed in pounds per thousand gallons, one pound per thousand gallons being equivalent to 120 parts per million. Data available indicate that any mill should be able to reduce its fiber losses to less than one-half pound per thousand gallons or 60 parts per million. In fact in certain types of the industry it is feasible to operate on substantially a closed basis. If fiber losses are reduced only to the point economically practicable they will not become an objectionable factor in stream pollution. Frequent checking by the determination of suspended solids in the mill effluent is absolutely necessary to know just how many

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dollars in valuable fiber is being wasted daily. This determination should be at least a weekly, and preferably a daily, routine procedure in all mills.

DISSOLVED OXYGEN

The analytical procedure followed in the dissolved oxygen determination is the Rideal-Stewart modification of the Winkler method. Great care must be taken in collecting samples for this determination to prevent air from coming in contact with the liquid, and thus increasing the normal oxygen content of the sample. Furthermore, the determination must be made in the field.

This determination is of particular value in studying the effect of pollution upon a stream, since by it the reduction in the dissolved oxygen content of the water may be definitely measured. If the dissolved oxygen falls below two parts per million for any appreciable length of time, fish will either die or seek other habitats. A somewhat higher residual, probably three or four parts per million, should be maintained, however, as a factor of safety. The significance of this determination will be more apparent from the following discussion.

BIOCHEMICAL OXYGEN DEMAND

The biochemical oxygen demand is a test to evaluate the requirements of the waste upon the oxygen resources of the stream. A small portion of the sample to be tested is mixed in a bottle with a relatively large volume of water containing a known amount of dissolved oxygen. The bottle is sealed to prevent contact with the atmosphere and allowed to stand at a temperature of 20 degrees C. or 70 degrees F. for certain periods of time, five days being frequently used, after which the dissolved oxygen remaining in the mixture is determined. The difference between the initial and final oxygen content represents that consumed by the measured quantity of waste. A correction is made by the similar treatment of a sample of water not containing the waste to make allowance for any oxygen demand of the water itself. Thus the analyst approaches as nearly as possible the actual changes that take place in a stream when it is polluted by this waste.

This determination is of particular significance in measuring the comparative effect of various wastes upon a stream. Numerous analyses of purely domestic sewage indicate that it has a five day biochemical oxygen demand of .167 pounds per day per capita of tributary population. This figure may be used in converting industrial wastes to population equivalents for comparative purposes, and while the results may not be absolutely correct, due to the different reactions of various types of wastes, the percentage of error will not appreciably affect the ultimate conclusion. While the dissolved oxygen remaining in the water of a stream may be accurately determined, its biochemical oxygen demand is also essential to accurately measure the effect of pollution because the remaining unoxidized organic matter may ultimately deplete the residual dissolved oxygen present as the process of nitrification or oxidation continues. The significance of this analysis will also be more apparent in connection with the following discussion.

Both the oxygen demand and dissolved oxygen content of the water of a stream is necessary to determine the "oxygen balance" since the dissolved oxygen is drawn upon to satisfy the oxygen demand. If the dissolved oxygen present exceeds the oxygen demand depletion of the dissolved oxygen will not occur and thus a *positive* oxygen balance is indicated, conversely if the oxygen demand is greater than the dissolved oxygen the oxygen balance is *negative* and depletion of the dissolved oxygen may take place. A negative oxygen balance, however, may be counteracted by re-aeration providing the rate of demand does not exceed the rate of re-aeration.

Effect of Waste Upon a Stream

In considering the effect of organic waste upon the dissolved oxygen of a stream, two predominating factors must be taken into consideration, namely, the oxygen demand of the wastes entering it, and the oxygen resources of the stream. The oxygen resources of a stream consist of the oxygen present in solution, that which may be taken up by the stream from the atmosphere either directly or through the agency of growing plants, and that which is available in the form of nitrates and nitrites. The latter, however, are available only when the oxygen of the stream is entirely depleted, and may not, therefore, be considered in a study where a residual oxygen supply is to be maintained.

In considering these major factors, there are many counteracting and influencing conditions including

(1) The nature or character of the stream, as to whether it is swiftly flowing or ponded by dams in power development.

(2) Extent of forestation or deforestation.

(3) Plant or other aquatic life present.

(4) Temperature.

(5) Character of sewage or industrial wastes entering the stream.

(6) Ratio of the wastes to the stream flow, particularly during low water or critical periods.

(7) Distance intervening between points of pollution.

Not only does the character of the stream have a great deal to do with the stream's ability to assimilate pollution, but it also has a material effect upon the type or character of aquatic life that may be present. Due to agitation a rapid, swiftly flowing stream replenishes its supply of oxygen much more quickly than a sluggish one. However, in considering bacterial pollution, the matter of time of flow is of greater importance than the agitation or swiftness of the stream. Investigations by the United States Public Health Service in the Ohio River indicate that approximately 95 per cent of the bacteria are removed in 100 hours' time, and that this time is little affected by the velocity of the stream. On the other hand, however, the replenishment of oxygen due to agitation, will assist a stream materially in its oxidation of the organic matter, and retaining a residual supply of oxygen necessary for fish life. The damming of a swiftly flowing stream forming pools and falls in connection with a power development will materially change the character of organic and aquatic life that the stream will sustain. A stream thus developed becomes more like a lake, and the type of fishes common to lakes will gradually predominate. There is thus a material change in the character of the aquatic life, due merely to the changing in the character of the stream.

Deforestation has probably done more to change the character of aquatic life in our streams than all the pollution entering them. Formerly a stream in these areas was cool and springfed, shaded by trees. Now that the forests have been cut off the shade has been removed, the springs have dried up, and the stream has changed from a cool, uniformly flowing one throughout the summer, to a turbulent, muddy stream at high water, and a tepid, slow flowing stream during the summer. Such a stream will not sustain trout, although originally they may have been abundant. Furthermore, the development of agricultural areas tributary to the streams subsequent to deforestation has changed materially the character of life in the streams. In fact, organic material from the fertilization of fields may actually cause serious pollution.

A luxuriant growth of vegetation may have a very material effect upon the condition of a stream and the resultant aquatic life. Growing plants give off oxygen and furnish material food for fish and other animal aquatic life. On the other hand, dead plants consume oxygen during decay. In the summer or growing period, therefore, plant life may be beneficial, but in the late fall or winter during decay they are detrimental to fish life. This is probably an important factor in the cause of dead fish during the winter months when lakes are covered with a sheet of ice, since it is during this period that decomposition of the vegetation uses up the oxygen and the ice sheet prevents re-aeration of the water to meet this demand. Although, as stated, under conditions of decomposition plant life may result in using up oxygen, vegetation or plant life is absolutely necessary for fish life. In fact, it may be stated that no plankton or vegetation, no fish.

Climatic conditions have a very material effect on the ability of a stream to support aquatic life. During warm weather, decom-

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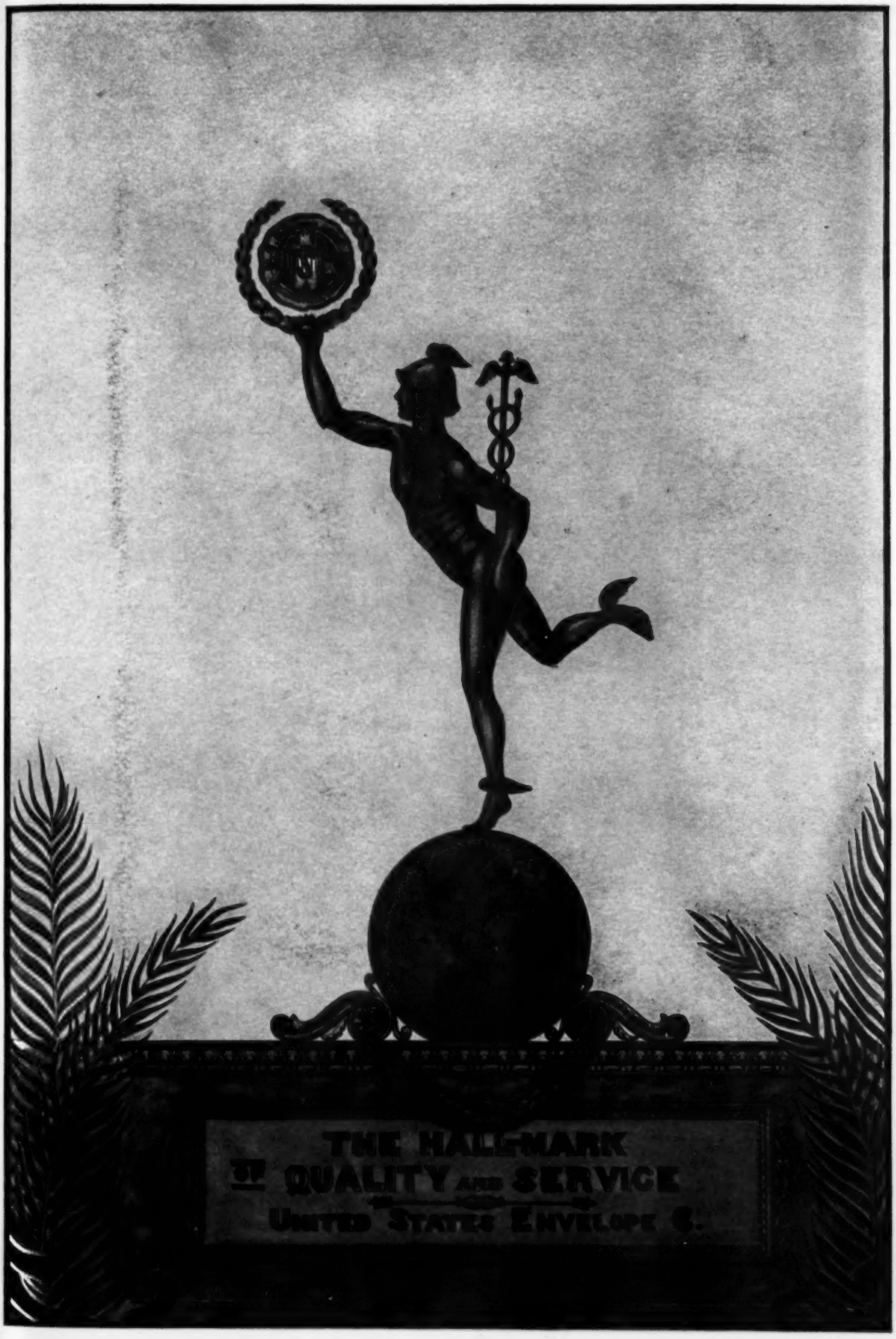
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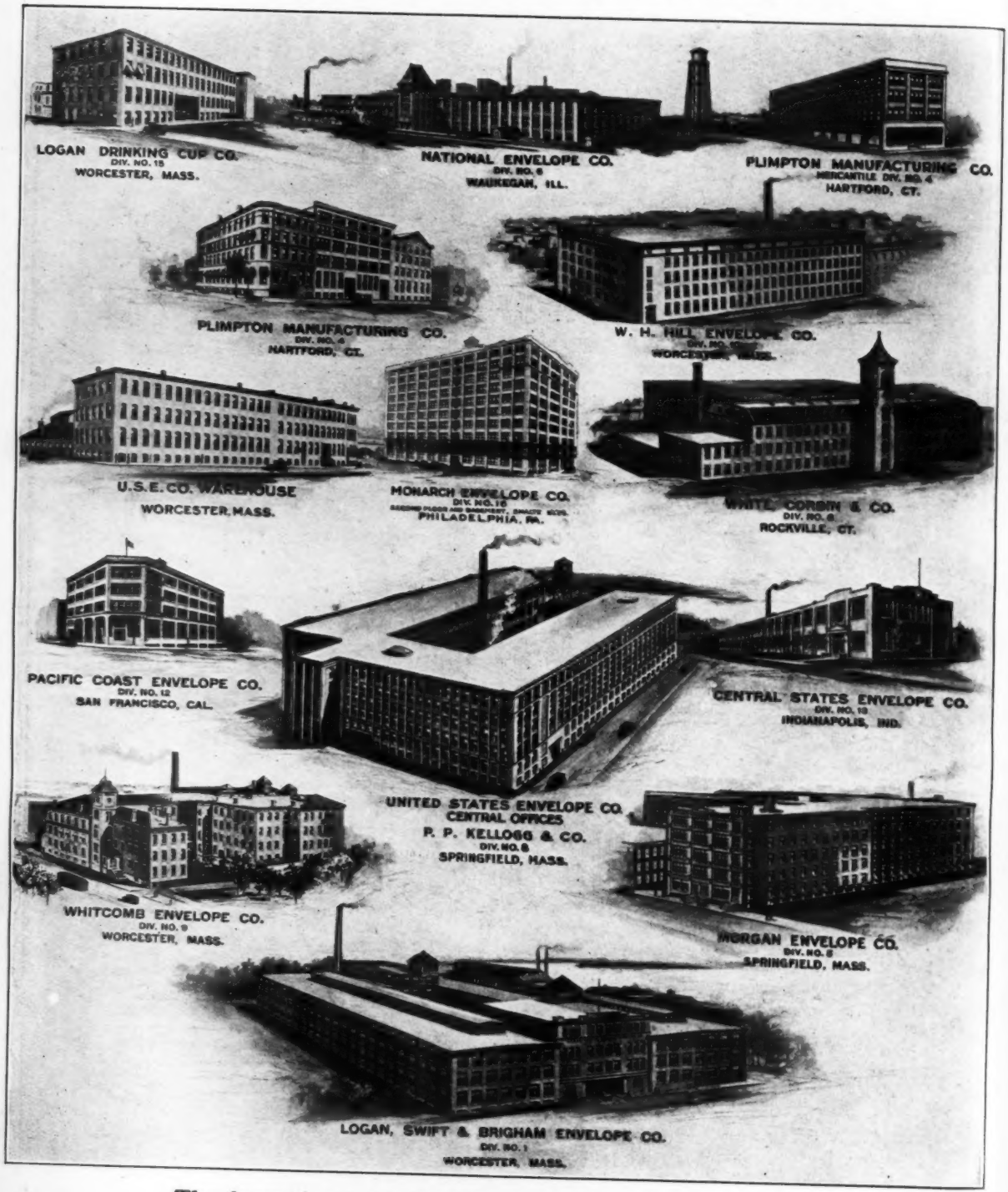

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position of the organic matter is very rapid and the oxygen of the stream is used up more quickly. On the other hand the amount of oxygen that the water will actually retain in solution is less in warm than in cold weather, being about 14 parts per million at 0 degrees C., the freezing point, and 9 at 20 degrees C., ordinary room temperature, so that in warm weather when a greater supply of oxygen is required by the waste, less is actually available in the stream. Furthermore, the tolerance of fish is greater in a cold than a warm water, and a greater amount of oxygen is required by the fish when the water is warm. Warm weather, therefore, is apparently deleterious to fish life in many ways.

The character of pollution entering a stream is of course a material factor. One plant although contributing much less in actual volume than another may contribute even more in its actual effect upon the stream, because of the greater concentration of its waste. In considering the ratio of pollution to stream flow this should be taken in consideration. In order to evaluate all classes of waste it is desirable to express them in population equivalents based upon the relative strength of the wastes as compared with purely domestic sewage, or in some other common factor.

The distance between sources of pollution must also be carefully considered since the effect of the pollution from a plant above may not be eliminated before an additional load is placed upon the stream. Such being the case the apparent effect of the pollution from the lower plant is much greater than would be the case were the plant above a greater distance.

Figure I adapted from a chart in Bulletin No. 146 entitled: "A Study of Pollution and Natural Purification of the Ohio River" by the United States Public Health Service, illustrates the effect of re-aeration upon the dissolved oxygen content of a stream. It will be observed from this figure that were it not for re-aeration

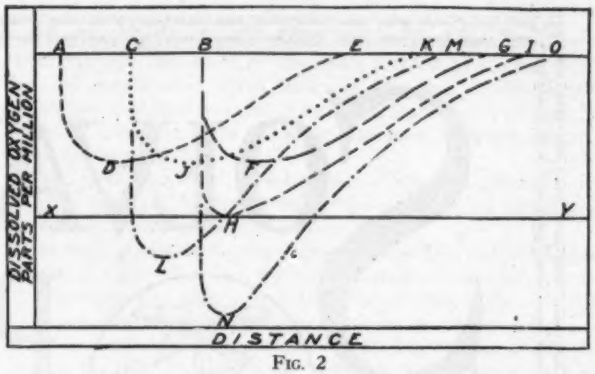
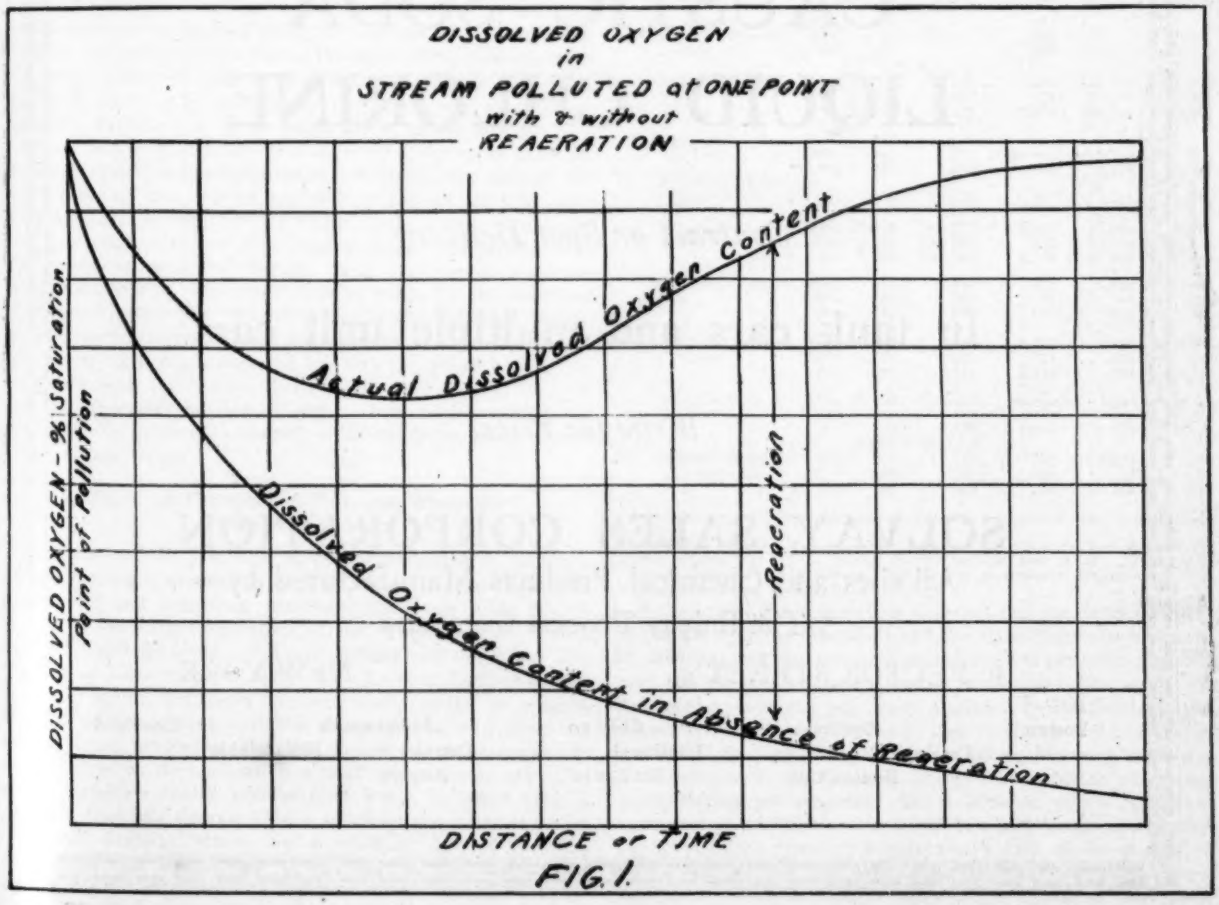


FIG. 2

the reduction in dissolved oxygen due to organic wastes would continue until all were oxidized and the stream would not replenish the supply. However, as is indicated by the upper curve the replenishment of oxygen gradually restores the stream to its original condition. The replenishment of this oxygen as has been stated depends upon numerous factors, such as agitation and plant life present. Furthermore, the greater the depletion of oxygen in the stream the greater the tendency for it to take oxygen from the atmosphere, due to what might be termed the difference in potential or pressure.

Where there are several sources of pollution tributary to a stream the responsibility for objectionable conditions may be very difficult to establish. In fact, in some instances it is almost indeterminate. This fact is illustrated by the following oxygen profile or diagram in Fig. 2. Assume that an industrial plant "A" dis-



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charges waste into a stream, and that its effect upon the oxygen content of the water is indicated by the curve "ADE." This curve remains well above what may be considered the critical line "XY" below which the oxygen content may be considered so low that fish life will be affected. The reduction in dissolved oxygen from another plant "B," located further down stream, alone is indicated by the curve "BFG," but because the stream has not entirely recovered from the pollution of "A," when that from "B" enters, the actual accumulative effect of the pollution is represented by the reduction at "H," near the critical line "XY" but not below. Furthermore, this effect extends further down stream to "I." Plant "C" may be later installed. The actual reduction in oxygen by "C" is indicated by the curve "CJK," but because of the pollution from "A" the actual reduction below "C" is indicated at point "L," below the critical line "XY" and extends down stream to "M." Also, because of the accumulated pollution from all three plants, the condition below "B" is indicated by the reduction at point "N" far below the critical line "XY," and this combined pollution extends still further down stream to point "O."

There is thus an accumulative effect. Conditions along the stream may have been satisfactory with only plants A and B operating, but when C was installed the conditions became critical. The natural tendency of the public under such conditions is to lay the whole trouble to plant "C," especially in view of the fact that critical conditions actually existed just below this plant after its installation and not before. In reality, however, "C" may be no more a contributing factor to pollution than either "A" or "B." If there were sufficient distance between the points of pollution the actual effect of the wastes from the three plants would not be deleterious to fish life insofar as oxygen depletion is concerned.

With the many controlling and counteracting factors affecting stream pollution as outlined above, it is practically impossible to predict with any degree of accuracy the actual effect of waste upon a stream, particularly where there are many plants and many classes of waste. The only precise or definite way of securing such data, therefore, is by an actual survey of the streams, and thereby a definite determination of the effect of the waste upon the particular stream under consideration. Although data secured for one stream may in a way be applicable to another similarly situated, there are so many varying factors such as ratio of surface area to depth, velocity of flow, type of aquatic life present, etc., that conditions materially change. Such a survey of a stream should include first, selection of suitable points for the collection of samples of water from the stream, and second, dissolved oxygen and biochemical oxygen demand determination of samples collected periodically, particularly over the low flow or critical period. In connection with this survey there should be a careful analysis made of the wastes entering the stream, both from municipalities and industries, in order to evaluate or determine the relative effect of the various wastes.

Effect of Pollution on Fox and Wisconsin Rivers in Wisconsin

Application of the preceding theoretical discussion of the effect of pollution upon streams is well illustrated by surveys of the Lower Fox and Wisconsin Rivers in Wisconsin made by the Bureau of Sanitary Engineering of the Wisconsin State Board of Health and the Pulp and Paper Industry of the state. The chemists of fourteen paper mills' laboratories cooperated in this work. In order that more uniform results might be secured, standard solutions for all analytical determinations were furnished by the Board of Health, and mill chemists were instructed in the technique of the analysis by a state representative who also located definite sampling stations from which to collect samples of water from the streams. Daily samples were collected at the designated sampling stations and analyzed by the mill chemists. The results were turned over to the Board of Health for compilation and are embodied in a complete report "Stream Pollution in Wisconsin," published in 1927. This report also includes a rather complete discussion of the whole problem of stream pollution and much other detail data not discussed in this paper. Copies can doubtless be secured from the State Board of Health, Madison, Wisconsin. The following discussion is based upon data from this report.

The Lower Fox River is that portion of the Fox proper, about 38 miles in length, located in the northeast section of Wisconsin, draining Lake Winnebago into Green Bay.

The mean stream flow from a total drainage area of 6,150 square miles was 4,100 cubic feet per second for the period of 1896 to 1915 inclusive, and 5,489 second feet, 1916 to 1926, inclusive. The maximum mean daily discharge recorded for the entire period was 20,100 second feet, and the minimum mean daily 742 second feet on August 15, 1921. It is possible, however, that a minimum flow of 2500 second feet can usually be maintained by manipulation of the storage in Lake Winnebago. Fourteen dams built for power and navigation purposes utilize about 134 of the 166 feet of fall between Lake Winnebago and Green Bay, thus separating the stream into a series of pools.

The sewage from six cities with a total population of 87,689 and the wastes from 34 pulp and paper mills with an estimated population equivalent to 744,500 enters the stream.

The following table indicates the comparative strength of paper mill wastes as compared with domestic sewage. It should be noted, however, that the number of determinations are rather limited and therefore may not be truly representative, nevertheless, they are significant.

COMPARATIVE ANALYSES OF SEWAGE AND PAPER MILL WASTES

No. of samples	Type of waste		Biochemical oxygen demand	Solids			
				Total	Suspended	Solution	Loss on ignition
			SEWAGE				
15	Average of composites from 15 cities	Max.	213	.....	297	.....	.....
		Min.	52	.....	101	.....	.....
		Av.	121	.....	187	.....	.....
			PULP MILLS				
6	Sulphite waste liquor	Max.	22,000	127,900	4,950	127,478	117,200
		Min.	10,000	88,940	424	88,158	77,950
		Av.	16,233	106,325	1,565	104,760	93,640
2	Sulphate mill * effluent	Max.	800		(One analysis only)		
		Min.	500				
		Av.	650	2,880	756	2,124	1,560
1	Sulphate mill diffuser waste		1,400	1,728	167	1,561	1,072
4	Rag digester or rotary waste	Max.	10,100	60,952	1,880	51,024	50,526
		Min.	5,500	44,238	292	42,958	42,096
		Av.	7,247	54,574	1,150	47,960	45,189
4	Rag washer waste	Max.	680	1,840	420	1,824	894
		Min.	170	268	88	146	226
		Av.	366	795	245	600	434
5	De-inked pulp mill wastes	Max.	650	6,044	4,916	1,256	2,802
		Min.	60	1,122	724	398	642
		Av.	263	3,619	2,408	791	1,371
4	Bleached pulp waste	Max.	25	29,444	29,080	3,042	14,825
		Min.	0	984	64	364	610
		Av.	6	8,709	7,440	1,269	5,425
			PAPER MILLS				
17	Save-all effluents or white water	Max.	206	1,486	788	1,102	1,098
		Min.	35	198	94	40	80
		Av.	88	598	275	389	440

* Results probably high because of difficulty in process when samples were collected.

NOTE:—Analyses of Sewage from bulletin 132, "Sewage Treatment in the United States," by U. S. Public Health Service, and of Mill Waste from "Stream Pollution in Wisconsin," by Bureau of Sanitary Engineering, Wisconsin State Board of Health.

Referring to Fig. 3, it will be observed that the oxygen content of the water of the Fox River at Lake Winnebago, above sources of pollution, was between seven and eight parts per million, practically 100 per cent saturation for the temperature then prevailing. Pollution from a total population equivalent to 56,000 entered the stream at Neenah and Menasha. Due to storage are re-aeration in Little Lake Butte des Morts just below, however, there was little reduction in the dissolved oxygen content of the stream between Neenah and Appleton. Below Appleton with a population equivalent to 469,000, however, it will be noted there was a marked reduction in the dissolved oxygen during each of the months of July, August, and September. This reduction continues below Kaugauna with a population equivalent to 88,000 to just above

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DePere where, in the month of August, there was practically no dissolved oxygen remaining. In July and September, however, when the stream flow was greater the minimum was reached about 6 miles below Kaukauna and remained practically constant or increased to DePere. Re-aeration over the dam at DePere replenished the oxygen to a considerable extent, but there was a material reduction due to pollution below so that at the mouth of the river a critical condition again prevailed.

During the month of August when the most critical condition prevailed in the Fox River, it will be observed that the average stream flow was only about 2,890 cubic feet per second. During the month of September when the lowest dissolved oxygen content was about 3.6 parts per million, the stream flow averaged about 4,310 cubic feet per second. From a study of this and other available data, it is believed that a minimum stream flow of 4000 cubic feet per second would so handle the waste at present tributary to the Fox River that critical conditions would not prevail. The flow during the summer months, however, drops to 2500 cubic feet per second or less. It is believed, however, that a flow of 2500 cubic feet per second could be maintained. On this hypothesis, therefore, it would require a reduction in the waste polluting the stream of $\frac{4000-2500}{4000}$ or 37½ per cent, in order to maintain reasonably satisfactory conditions with a flow of 2500 second feet. This would correspond to a population equivalent of 520,000. Imhoff tank treatment of domestic sewage produces an improvement of about 33 per cent. Sulphite pulp mills on the Fox River have a total tonnage of 355 daily. According to analyses made of these wastes this is equivalent to a population of 578,650. If 85 per cent of the sulphite waste liquor could be prevented from entering the stream by utilization in the industry such as by evaporation and burning it would reduce the pollution load about 491,000 in population equivalent or to a residual load of 341,000, an actual total improvement of about 59 per cent which would undoubtedly eliminate the existing objectionable conditions.

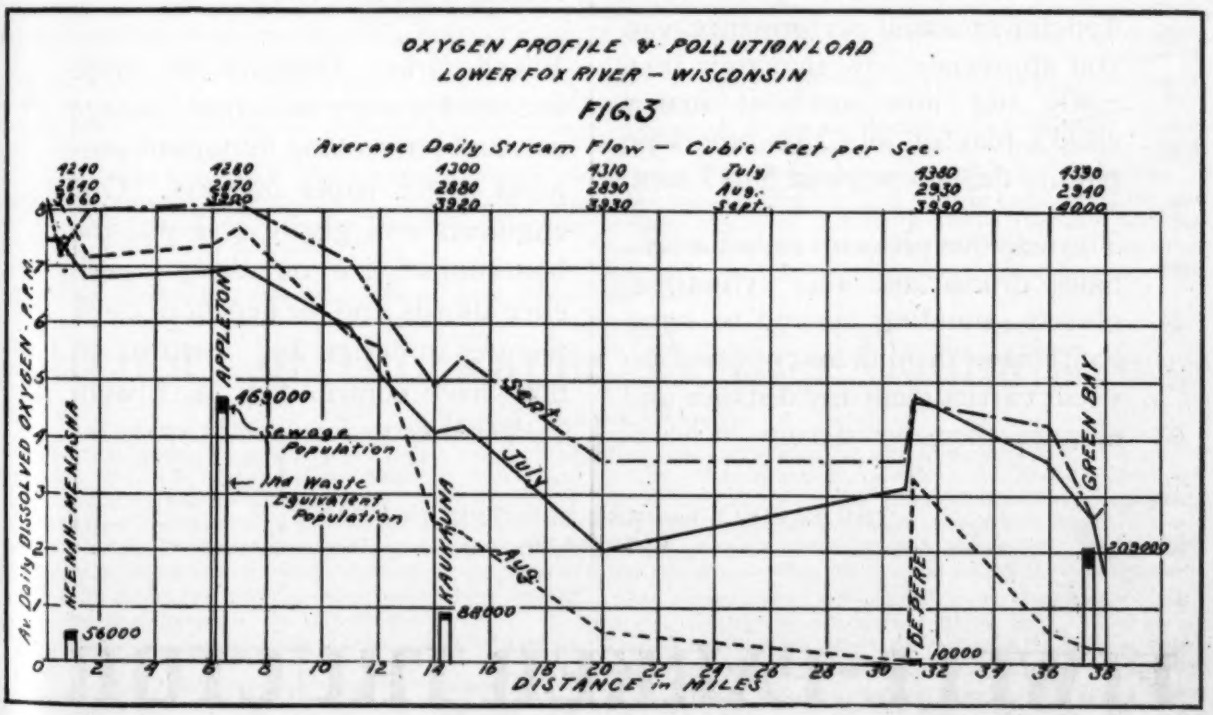
The Wisconsin River rises in the north central part of the state and discharges into the Mississippi in the southeastern corner. The stream survey, however, was confined to about 150 miles from Rhinelander to Nekoosa. In this section there are 20 dams so that the ponded condition is similar to that of the Fox except that distances are greater between the dams and there are some intervening rapids particularly at Grandfather Falls just below Tomahawk.

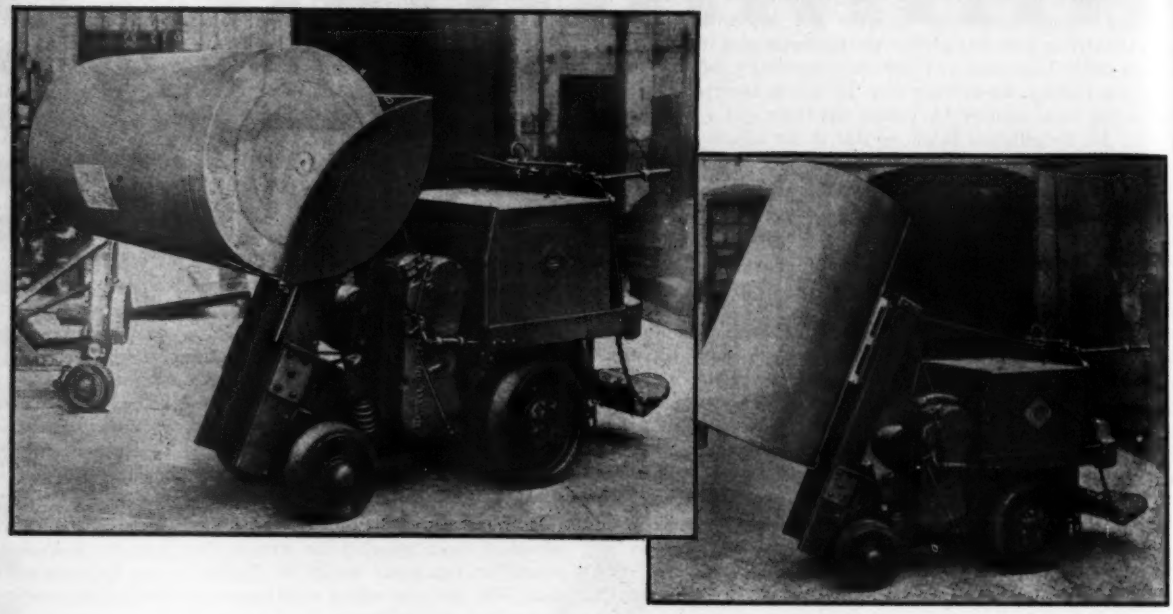
The sewage from 10 municipalities with a total population of 64,000 and the wastes from pulp and paper mills with an estimated population equivalent of 913,000 enters the stream.

Figure 4 illustrates a similar survey upon the Wisconsin. Due to the greater stream flow during the months of August and September, critical conditions did not prevail, as was the case in the month of July. The marked increase in dissolved oxygen below Tomahawk was due to agitation in the stream through a section of the river known as Grandfather Falls. From a study of this and other data it is evident that satisfactory conditions would prevail in the Wisconsin with a stream flow of 4000 second feet, while the minimum flow is seldom less than 2000 second feet. The improvement in the wastes entering the stream, therefore, required to maintain satisfactory conditions would be about 50 per cent, equivalent to a population of 488,500. Sulphite mills on this stream have a total daily capacity of 385 tons.

If 85 per cent of the sulphite waste liquor from these mills were prevented from entering the stream, therefore, the reduction in population equivalent would be 531,000, or an improvement of about 54½ per cent, which would prevent objectionable conditions during low stream flows.

It should be pointed out that biochemical oxygen demand tests were not made in connection with the dissolved oxygen determination, so that a complete picture of the condition of the stream, is not available. The fact that the surveys were made during low or critical stream flows, however, permits the above discussion and conclusion. Had the survey been made when conditions did not become critical it would have been necessary to secure complete data, evaluate it and reduce the results to low flow condition to determine the extent of improvement necessary. Furthermore, without the oxygen demand of the water of the stream itself, the oxygen balance cannot be determined.





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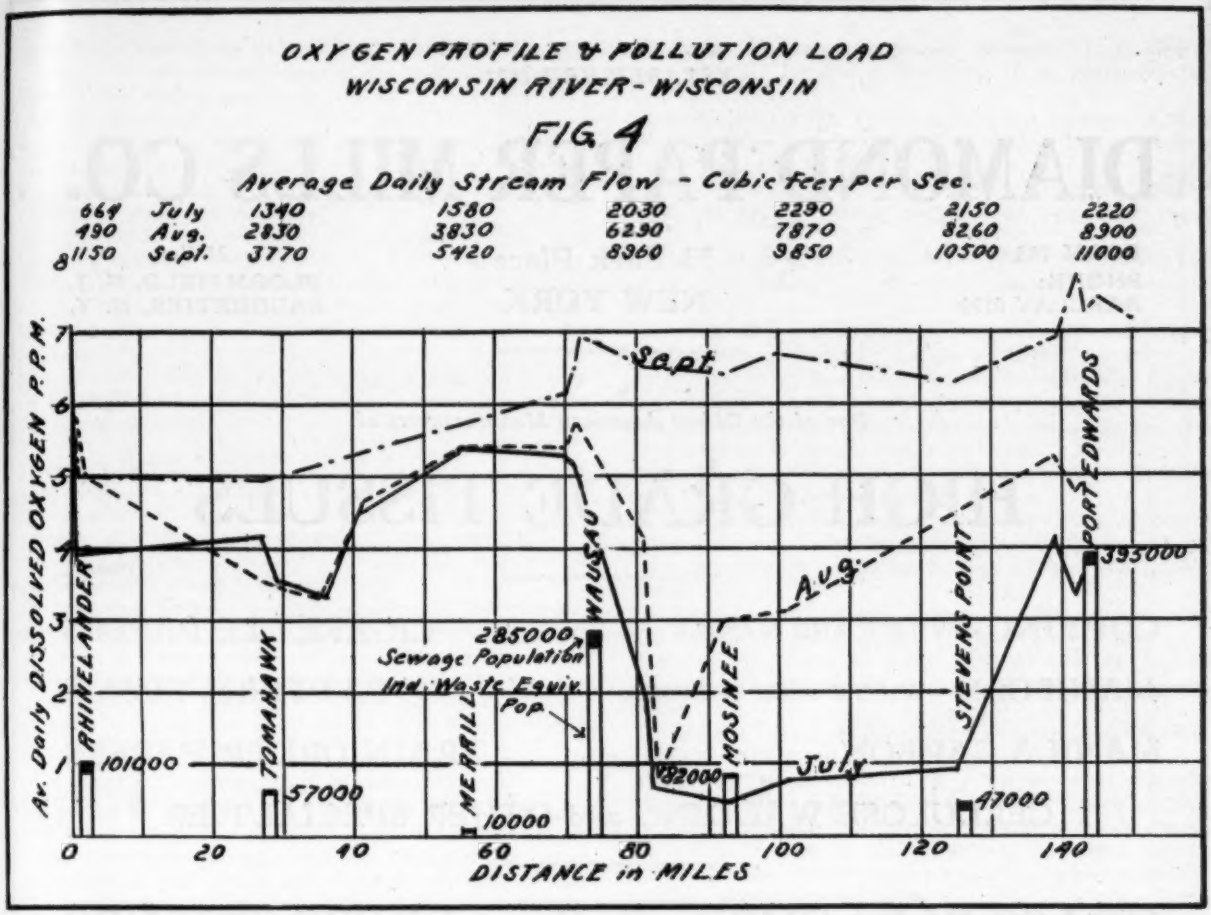

From the information presented in this paper it is evident that

(1) Although only a limited amount of data are available many pulp and paper mill wastes constitute serious factors in stream pollution, greater in some cases than pollution from other sources.

(2) Each stream, however, must be studied, together with the sources of pollution in order to accurately evaluate the various polluting factors and determine what improvements are necessary.

(3) The most objectionable waste from the pulp and paper industry is sulphite waste liquor. The development of a process to utilize this waste and eliminate it as a source of pollution would therefore abate many if not most of the critical conditions now existing where such wastes are a factor.

(4) In order to determine more definitely to what extent the pulp and paper industry is a factor in pollution, more definite studies should be inaugurated at the individual mills, the various classes of wastes should be analyzed and possible improvements considered either individually by the mill chemists or in cooperation with state officials. This analytical data also is necessary in order to evaluate or determine the efficiency of any improvements that may be made.

Undoubtedly the first consideration in this problem is: To what extent is your mill a factor in pollution? This question cannot be answered until the necessary analytical surveys are available.

In conclusion, therefore, it is strongly recommended that the technical men of the industry familiarize themselves with the essential sanitary analyses, and either individually or in cooperation with state officials commence a scientific analytical study of the situation.

Report of the Paper Testing Committee

By B. W. Scribner, Chairman[1]

The committee prepared copy for another revised edition of the Association publication "Paper Testing Methods." This is the second revision, the previous one being made in 1922. In the six years that have intervened there have been many important developments in paper testing methods and instruments. Every effort was made to cover these new developments as adequately as possible in the limited time available, the new edition being urgently required due to exhaustion of the previous edition.

The more important changes and additions follow. All official Association methods so far adopted were included. The section dealing with misroscopical examaination was largely rewritten and several photomicrographs of fibers added to more adequately cover the illustrations of common papermaking fibers. The section on effect of relative humidity was entirely rewritten and was enlarged to include discussion of control of relative humidity.

The section dealing with physical testing was considerably enlarged. New instruments described are the M.I.T. folding tester; Carson's bell-crank lever device for calibrating the Schopper tester; an extractor and friction cleanser for carbon papers and the like; and a wet-rub tester for resistance to surface friction. Three

[1] Member TAPPI. Chief of Paper Section, Bureau of Standards, Washington, D. C.

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instruments for determining air resistance and four methods, with illustrations, for determining expansion and contraction are described. A new blotting paper tester devised by Dalen and made by Schopper is included.

Considerable material dealing with measurement of permeation of liquids was added. This includes description of several methods for determining degree of internal and surface sizing, water resistance and grease resistance.

Additions to the section dealing with chemical analysis were methods for moisture, casein, paraffin, and formaldehyde.

The total number of new methods described is twenty-five. The number of illustrations was increased to sixty-two, the present edition containing forty-five. The text was revised considerably throughout.

It is understood that the new edition will be published in book form with board covers, this more permanent form of publication being considered desirable.

Status of Official Testing Methods

Three additional paper testing methods have been adopted by the Association. These are analysis of mineral coating, analysis of mineral filler and folding endurance. These were published in PAPER TRADE JOURNAL, November 10, 1927. The total number of official methods is now twenty-four.

Two additional methods have been completed by the committee and forwarded for the consideration of the Association in respect to adoption as tentative official methods. These are for determination of gloss and of opacity. In the former the use of a testing instrument of the Ingersoll Glarimeter type is specified. For opacity the contrast-ratio method, such as used in the Bureau of Standards tester, is specified.

Development of Methods

Development of methods for testing ink resistance of printing papers, grease resistance, opacity, adherence of mineral coating, dot method for fiber composition, and dirt content of fine papers is in progress in the various sub-committees appointed to deal with these subjects. The present status of this work will be reported by the chairmen of the sub-committees at the sectional meeting on paper testing.

The Bureau of Standards has made a study of the determination of bulk of paper and a report of the findings will probably be available in the near future for the use of the committee. It is expected that the reports of these development projects will lead to profitable discussion of them during the sectional meeting.

General Developments In Paper Testing

Following are some general developments which have come to the attention of the committee.

Information on the application of the dot method of fiber analysis to roofing felts is contained in two publications. One is a report of a sub-committee of the American Society for Testing Materials on "Bituminous Waterproof and Roofing Materials" published in PAPER TRADE JOURNAL, September 1, 1927. The other article which appeared in the same journal April 7, 1927, is entitled "Determination of the Fiber Composition of Roofing Felts" and is by Lofton, Bureau of Standards. The method is reported upon favorably in both instances.

Two important articles on conditioning paper appeared in PAPER TRADE JOURNAL. One, by Ruff, describes a conditioning chamber devised by the Mead Pulp and Paper Company (August 25, 1927). The other article by Jarrel, Bureau of Chemistry, shows that in conditioning paper, its final moisture content, upon coming to equilibrium with the conditioning atmosphere, is dependent to some extent upon whether the initial moisture content is higher or lower than the content corresponding to the conditioning atmosphere (July 21, 1927).

Following are articles on physical testing, published in PAPER TRADE JOURNAL:

"A Surface Pick Test for Paper and Board," A. J. George, March 31, 1927.

"Expansion of Paper with Varying Humidity," R. C. Griffin, August 4, 1927. Includes a description of an instrument for measuring expansion.

"The Emanueli Porosity Tester," L. Emanueli, September 8, 1927.

"Built-Up Fiber Board Tester," T. A. Carlson, Forest Products Laboratory, January 12, 1928.

"Calibration and Adjustment of the Schopper Folding Tester," Carson and Snyder, Bureau of Standards Technologic Paper No. 357.

"A Study of the Mullen Paper Tester—Effect of Clamping Device on Test Results," L. W. Snyder, Bureau of Standards, August 4, 1927.

"Standard Method of Measuring Bulk of Paper"—Preliminary Report of Bureau of Standards, December 8, 1927.

"A Microscope for the Examination and Photography of Paper," L. V. Foster, Bausch and Lomb Optical Co., October 14, 1927. (Describes an improved illuminating device similar to that previously described by Jones. October 14, 1926.)

"Color Measurement by Ives Tint Photometer," P. K. Baird, Forest Products Laboratory, April 28, 1927.

The following articles dealing with determination of copper number appeared in PAPER TRADE JOURNAL:

"The Determinaton of Copper Number, Clibbens and Geake," September 22, 1927.

"Determination of Copper Number of Cellulose Materials," Staud and Gray, June 23, 1927.

"The Determination of the Copper Number," Schwalbe, June 16, 1927. This is a résumé and discussion of the many proposed methods.

"A Modified Method for Determination of the Copper Number of Paper," Scribner and Brode, December 1, 1927.

Bentzen questions the value of the potassium-ferrocyanide iron reagent in an article published in Paper Industry, December, 1927.

Bureau of Standards Miscellaneous Publication No. 79, Standards and Specifications in the Wood-Using Industries, contains the TAPPI official paper testing methods and all known nationally-recognized specifications for paper.

Sectional Meeting on Paper Testing

The program for the sectional meeting consists of reports of the chairmen of the sub-committees and discussions of them, together with discussions of two articles prepared at the request of the Paper Testing Committee. The details are:

Reports of Sub-Committees:

"Ink Resistance of Printing Papers," E. O. Reed, Government Printing Office.

"Dot Method for Fiber Composition of Paper," C. E. Libby, New York State College of Forestry.

"Count of Dirt Particles in Fine Papers," C. R. Tait, Hammermill Paper Company.

"Adherence of Mineral Coating," R. H. Savage, Mead Pulp and Paper Company.

"Grease Resistance," H. A. Smith, Hammersley, Manufacturing Company.

Published Articles:

"The Emanueli Porosity Tester," by L. Emanueli, Societe Italiana Pirelli, Milan, Italy, PAPER TRADE JOURNAL, September 8, 1927.

Expansion of Paper with Varying Humidity, R. C. Griffin, Arthur D. Little, Inc., PAPER TRADE JOURNAL, August 4, 1927.

Summary

To sum up, the Committee prepared copy for the revised edition of Paper Testing Methods; prepared five additional testing methods for consideration as official methods, three of which have been adopted by the association; and has made some progress in development of new methods. Necessarily the last named work was relegated to the background in favor of the revision of Paper Testing Methods. With the latter out of the way, the development work will be given more attention.

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Starting Generator System Applied To Sectional Paper Machine Drive

By R. R. Baker[1]

The type of control best adapted for application to sectional paper machine drive is a subject which has received considerable attention in the past few years. Surrounding this problem are a number of very exacting conditions, all of which must be met by the truly successful drive. Broadly speaking, the problem is one of securing an accurate and reliable arrangement of control which will permit the paper machine operator to manipulate the various sections of the paper machine with the greatest degree of flexibility consistent with simplicity of arrangement and ruggedness of apparatus.

A very unique and highly satisfactory solution to this problem has been accomplished by the use of the starting generator type of sectional paper machine control as developed by the Westinghouse Electric & Manufacturing Company. This paper contains a brief discussion of the various conditions surrounding this problem, a description of the starting generator type of control as developed to meet these requirements and a discussion of the merits of the system.

D. C. Sectional Machine Drive

The discussion is confined to the direct current type of sectional paper machine drive, which type constitutes a very large percentage of the sectional paper machine drives in operation today. Such a drive includes a number of direct current motors which drive the various sections of the paper machine and which receive their power from a main direct current generator. The operating speed range is obtained by suitable adjustment of the voltage of the main generator.

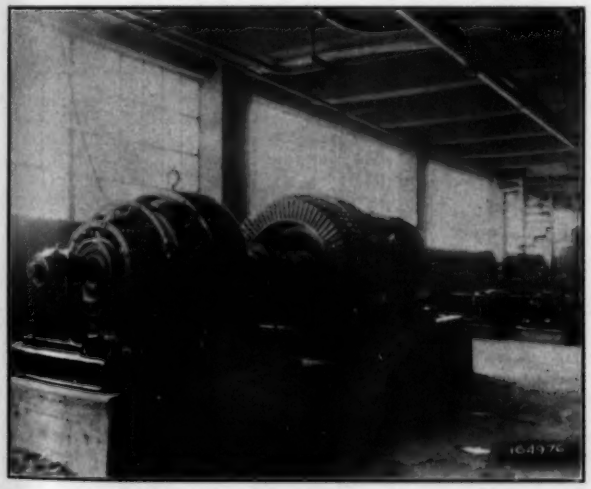

FIG. 1

An actual installation view of synchronous motor generator set, showing main and starting generators. The exciter and master set are shown in the background.

The various conditions which are encountered in the operation of a paper machine, such as clearing the rolls of "broke," cleaning, repairing and replacing felts and wires, washing up, etc., makes it necessary to start and stop the various sections to perform these operations. These operations also necessitate inching the sections repeatedly or operating them at slow inching speeds for long priods of time, as illustrated in placing a new felt on the drier section. With the older mechanical drives, these operations were carried out in a rather unsatisfactory manner by the introduction in the driving train of a friction clutch or slip belt. With the advent of sectional motor drive, these rather uncertain pieces of mechanical apparatus have been replaced with control equipment. In order that the maximum possible advantage resulting from the use of sectional motor drive can be obtained, it is not

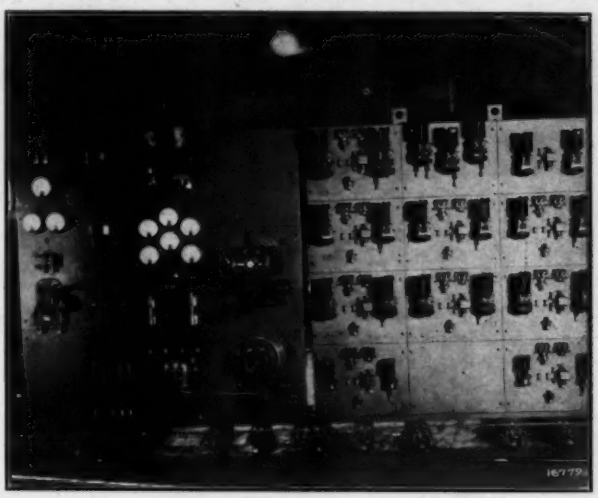

FIG. 2

Front view of a complete control board for sectional paper machine drive, using starting generator system.

only essential that these operations of inching, starting and stopping be performed as rapidly as possible, but it is also essential that these operations be performed without seriously over-stressing the mechanical parts of the paper machine, particularly the fourdrinier wire and the drier gears. It will be agreed that this is quite an important problem when consideration is given to the fact that the ponderous drier section or the calender section with its many tons of weight resting on the two lower bearings must be handled with the same ease and degree of flexibility as the lighter sections of the machine. Then again the problem becomes more complicated when consideration is given to the fact that the machine is required to operate over a comparatively wide voltage range and still the section motors must respond without causing undue strain in the component parts of the paper machine.

Elimination of Sudden Load Variations

No doubt all paper makers operating sectional paper machine drives realize the desirability of eliminating all sudden variations of load on the main generator which furnishes power to the various section motors, as any sudden load variation of large magnitude on this unit causes at least a momentary variation in the voltage which, in turn, causes variation in the speed of the individual driving motors. If these conditions occur with paper on the machine, the slight speed variation either tears or strains the sheet and trouble usually results.

The starting generator system of control has been developed to meet all of these rather exacting requirements. With this system of control as with the other systems, the main generator furnishes power for driving the section motors. With the starting generator system, however, a separate and smaller generator, usually driven from the synchronous motor of the main set or if desirable, from

[1] Westinghouse Electric & Manufacturing Co.

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a separate alternating current motor, is provided for inching and starting the various sections of the paper machine. The control is arranged so that the positive terminals of all the section motors are permanently tied together and this common lead is then connected to the positive bus of the starting and main generator by means of separate single pole knife switches. A separate starting and running bus is carried from each of the generators, through a carbon circuit breaker, to the controller of each of the section motors. Each motor control panel is provided with two magnetically operated contactors, one for connecting the section motor to the starting generator and one for connecting it to the running generator. The control includes an automatically controlled, motor operated rheostat in the field of the starting generator and a transfer relay which serves to transfer the section motors from the starting to the running generator at the proper time.

The starting generator normally operates at a very low voltage which is permanently adjusted to give the correct value of current to start the motors on the lighter sections of the machine such as the couch and presses. Separate relays are provided for the drier and calender sections which automatically short out a portion of the resistance in the starting generator field during inching or starting of the section. These relays are permanently adjusted to give the correct value of current to start the motors on these heavier sections. These various adjustments of the starting generator field resistance are permanent and remain constant regardless of the operating voltage of the main generator. In this manner, the starting conditions are always correct and are entirely independent of the operating voltage.

Inching Control

Each section of the machine is provided with a push button station which includes a "Start" and "Inch" button. If the operator desires to "inch" a section of the machine, he presses the "Inch" button. This energizes the contactor which connects the motor to the starting generator and as its voltage has been permanently adjusted to the correct value and is independent of the operating voltage of the main generator, the section motor de-

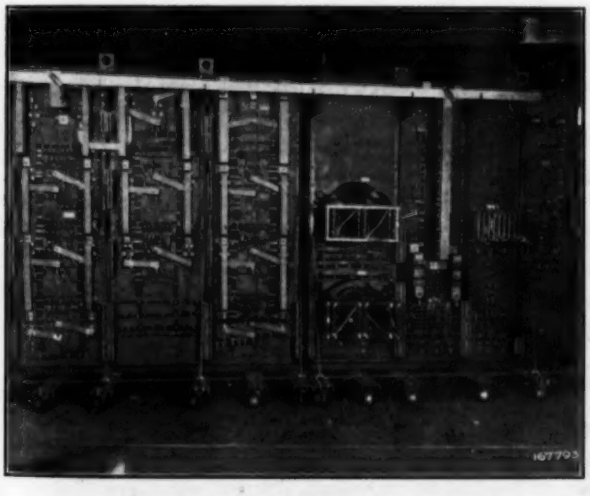

FIG. 3

Rear view of control board shown in Fig. 2.

veloping the correct starting torque, immediately starts to rotate and continues to operate at a slow speed as long as the "Inch" button is held down. When the button is released, the contactor opens and the motor stops. The moment the button is released, it may be pressed again and the motor will again start without the necessity of waiting for any further sequence of control operation. It is possible to inch all of the wet end sections simultaneously, however, the control is interlocked to prevent starting these sections when the driers or calenders are being inched so as to avoid any shock which might result from the higher voltage used for inching the drier and calender sections.

This method is quite an improvement over the resistance type of starting where very often, when operating at low voltages, it is necessary for the operator to wait until sufficient starting resistance is shorted out by the sequence of control operation, to permit the motor to develop the required torque to start or where, when

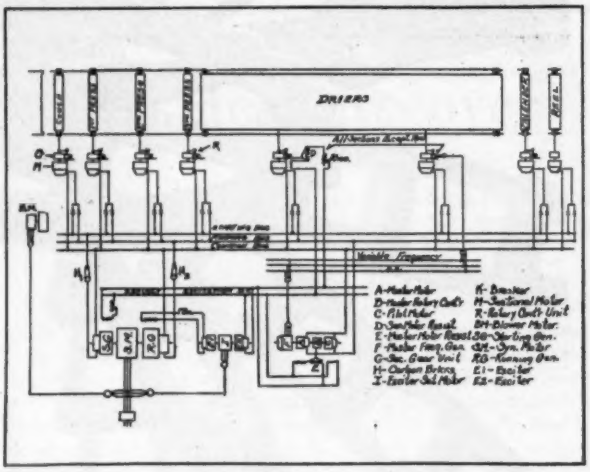

FIG. 4

Schematic diagram of starting generator system.

operating at high voltages, the motor immediately developed torques many times in excess of that required to start the section and thus introduces excessive strains into the equipment.

Automatic Regulation

When the operator desires to start a section of the machine, the "Start" button is pressed. From this point on, the operation of the control equipment is entirely automatic. The magnetic contactor connecting the motor to the "Starting" generator closes, and the motor developing the correct torque, independent of the operating voltage, immediately starts rotating. The motor operated rheostat in the field of the starting generator is energized and starts cutting out resistance in the field of the starting generator causing this voltage to increase and in this manner, the section motor is slowly and smoothly accelerated to the operating speed. During this accelerating period, there are no shocks or sudden applications of excessive torques such as result from the step by step cutting out of starting resistance, where the resistance starting method is employed. When the starting generator voltage is equal to that of the running generator, the transfer relay functions, causing the contactor connecting the motor to the starting generator to open and the one connecting it to the running generator to close, thus transferring the motor to the running generator at which time it automatically goes under the control of the speed regulator. After the transfer has taken place, the motor operated rheostat automatically returns to the starting position. It is possible to adjust the accelerating periods of the various sections and these are adjusted to meet the requirements of the particular section. The driers with their relatively large inertia require a longer accelerating period than the lighter sections. The entire machine may be started in a remarkably short period of time as the operator proceeds from one section to another, pressing the "starting" buttons at each of the sections.

As a separate generator is provided for inching and starting, the main generator is relieved of practically all of the suddenly applied loads and is, therefore, able to operate with a high degree of stability and it is possible to maintain stable draws on the wet end of the machine, even though inching the driers or calender section. This is of considerable importance as it permits holding the sheet

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on the wet end of the machine when it is necessary to "inch" either the calender or drier sections.

Advantages of the Starting Generator System

The use of the starting generator system permits of considerable simplification in the control equipment and entirely eliminates the usual motor operated starting drum, starting contactors and heavy starting resistance grids, and avoids the possibility of overheating such apparatus during long inching periods. The control for each of the section motors, consisting essentially of a starting and running magnetic contactor, an overload relay and three auxiliary relays, is mounted on a small panel, 32 inches wide by 24 inches high. The simplicity of the starting generator control layout permits mounting four of these small section control panels in one vertical section which reduces the length of the control board about 50 per cent and decreases the installation and maintenance expense. The simplicity of the starting generator type of control, together with its extreme flexibility makes it an ideal type of control for applications to sectional paper machine drives where simplicity and flexibility are of such vital importance.

The Development of Waste Heat Recovery

By S. W. Fletcher [1]

The past few years have wrought many changes and improvements in the heating and ventilating of paper mills. Not many years ago it was felt that condensation or drip was a necessity, but now in the modern and well ventilated mill, the conditions throughout the whole mill are comparable with those of the office.

Beginning with the installation of pipe coils on the roof in combination with exhaust stack over the paper machine, and passing through a period of experimentation and later development of real ventilating systems, mill owners and the workmen have learned that poor ventilation is not necessary in the paper mill, and have demanded better conditions. This has resulted in greater efficiency of the men, increased production, a better product, and preservation of the mill and equipment.

As you all know, there are many departments in a paper mill where a great deal of moisture is produced in the form of water vapor, and this must be absorbed by air and carried away. Many of these departments which now present a serious ventilating problem were not considered worth bothering about a few years ago. Among these departments which, due to the amount of water vapor released, require ventilation are the grinder and wood rooms, screen rooms, decker rooms, beater rooms, and last but not least, machine rooms. There are, of course, many other departments which present heating and ventilating problems, such as barking rooms, chip rooms and finishing rooms.

Ventilating the Machine Room

The most important room requiring heating and ventilating is the machine room. A few years ago it was decided that the amount of air to be passed through a machine room depended on the amount of moisture given off from the paper during its forming and drying period. The amount of air should be enough to remove the moisture thus evaporated in such a way and at such a rate as will give good working conditions in the room, and no more. This is contrary to all previous methods of determining the amount of air needed and many old systems are either too small to properly ventilate the room or too large for this purpose. If they are too large the room is adequately ventilated but so much more air is passed through them than is needed that it is a costly system to operate, especially as it is desirable to remove the vapor with as small a quantity of air as possible.

By removing air from the machine room a low pressure area results therein and causes an inrushing of air from the outside. This air comes either indirectly through adjoining buildings and departments or directly into the room from out of doors. It will be seen that this air must of necessity be heated in its travel, from the temperature at which it enters from outside to the temperature at which it is removed from the machine room. The amount of heat required from the mill in this process is entirely dependent construction and on local weather conditions, and is an important consideration in manufacturing pulp and paper. To obtain the maximum drying capacity from the drier cylinders with the minimum amount of steam it is necessary that as little of this heat as possible be provided through the driers. This being true it is, of course, realized that the proper method is to heat the air at its point of entry by a central apparatus.

Directing the Air Flow

It is then a question of determining the proper place to put this air in order to have it most effective. It is found that in most cases only a portion of this air is needed for preventing condensation on the roof and that very good results in lowering the steam pressure on the driers and preserving the felts can be obtained by supplying air for the bottom return felt. This is usually done by means of ducts across the width of the felt, these being equipped with cross nozzle outlets. In some of these nozzles regulation of the amount of air is provided so that wet streaks in the felt can be dried out. The cross ducts are fed by a main duct extending lengthwise down the back side of the lower felt. This type of installation has been almost universally adopted by the big news print mills.

Air for the Grinder Room

The grinder room requires considerable study. With hot steam belching out of the grinder at every opening and with wet floors surrounding the grinders, conditions are not only unpleasant but are actually dangerous. If enough air is pulled out of the grinder room to take out this vapor, the same quantity of air must be brought in to take its place. This fresh air has to be heated and it not only means a large installation but takes a great deal of steam to heat the air. This was the general practice until the last few years, when, to remedy the condition, the problem was attacked from a different angle, and the Baxter Grinder Exhaust System was developed. Instead of allowing the vapor to escape to the room and then try to take care of it, a system was designed to collect the vapor at its source, the grinder.

The opening on the lathe side of the pocket grinder is closed by a removable box and the hot vapor is removed from this portion of the grinder. This causes the vapor in the grinder to be drawn to this part of the grinder, with the result that air now leaks into the grinder through the openings where steam formerly was forced out. This arrangement causes the fresh, warm, dry air to be drawn toward the grinders and thereby removes the undesirable atmospheric conditions in the room.

By removing the vapor at its source and at high temperature the air has a great capacity for absorbing a large amount of water vapor, and a small quantity of air is sufficient for carrying away the moisture. This also simplifies the heating of the room by not allowing the vapor to escape and the heating system now required is very little more than is needed for the building without any grinders. A much less expensive system to install is now adequate for this heating and results in a large saving in steam and power for heating and distributing the reduced volume of air.

Heating Factors Involved

With ventilation coming to the fore for all of these departments, the heating became a serious consideration. The amount of steam required for heating the air for a small machine room was not a big

[1] Associate Member, TAPPI. J. O. Ross Engineering Corporation, New York, N. Y.

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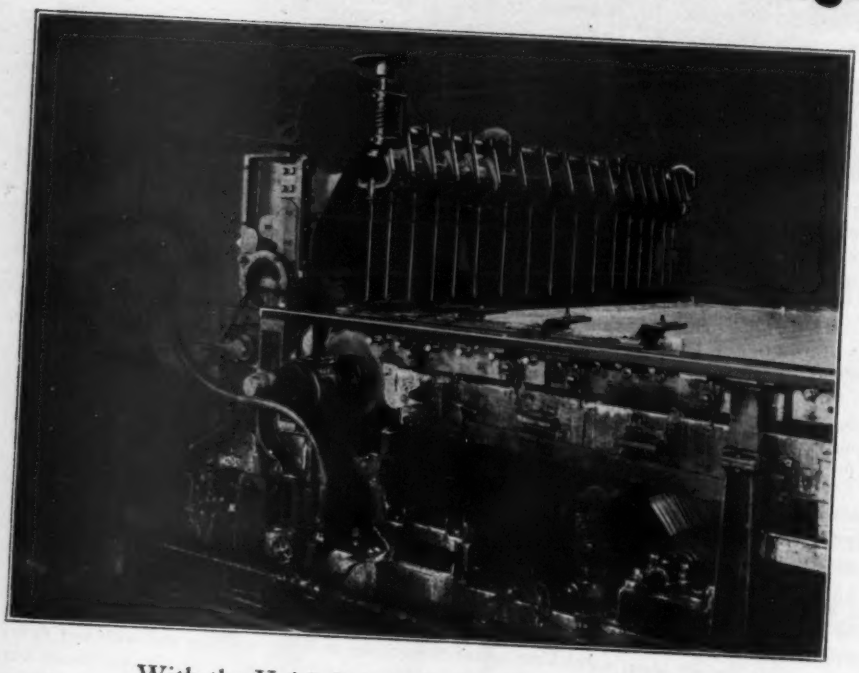

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factor. With the development of machines capable of turning out a large tonnage per day, the heating of the hundreds of thousand cubic feet of air required per minute became a vital factor, requiring several hundred boiler horsepower for heating the air alone. This air, after being heated, passes out through the machine room and absorbs the water which has been converted into vapor by the steam in the driers. In this way the outgoing air contains not only the heat furnished by the steam used for heating the incoming air, but also the large amount of heat required to turn water into steam.

Recovery of Heat

Two methods are used for recovering this heat which is largely going to waste. One is to use the hot vapor for heating water by passing it through a multiple stage air washer in which the water is finely atomized in each stage and passes from the first stage to the second and so on and the other is to use it for heating the incoming air to replace the outgoing air by passing it through equipment such as the Briner Economizer. A large proportion of the heat can be recovered by using it to heat water. Assuming that there is a use for such hot water this type of heater works out very well for a board mill where hot water is used in the heaters. Due to the fact, however, that air is always needed to replace that going out, the Briner Economizer has been generally used for recovering the heat from the exhaust vapor.

The Briner Economizer consists of a series of narrow channels separated by a thin piece of metal. The outgoing vapor passes through alternate channels and the incoming air passes through the other channels. The outgoing vapor which is condensed gives up its latent heat and this heat is transmitted through the dividing sheet and heats the incoming air. In this way an interchange of heat is obtained without mixing the vapor with the fresh dry air.

As is naturally expected the first installations were made in old mills, or rather mills that had been in operation, and the economizer was placed on the roof. This brought it close to the source of the waste heat but required remodeling of the supply systems, as in the majority of installations the supply apparatus was placed near the ground level.

Location of the Economizer

In many new installations it is customary to install all of the air apparatus in a penthouse on the roof. In this way all of the equipment is adjacent to the part of the building it serves with the exception of the apparatus supplying air to the bottom felt. On large machines it is customary to install the apparatus in several units. This gives a more flexible and better controlled installation and means that the ventilating system will not be seriously crippled in case one unit is down. It allows the supply to the lower felts to be handled by a separate unit. This is advisable because there may be times during the year when the roof units will not be in operation but the felt or pit system will be required.

An interesting development in the setting of the economizers has been worked out in connection with several new mills in Canada and the United States, and that is placing the air equipment including the economizers on a mezzanine floor over the paper machine drives. In this way the exhaust stacks from the hood are brought over horizontally to the economizer. These are kept low enough to permit the crane to pass over them. The supply ducts for the roof are brought in above the crane, so that it has a clear passage the full length of the machine room. This location also works out favorably for the apparatus supplying air to the lower part of the machine.

Air Flow in Economizers

The first installations of Briner Economizers were usually made in such a way that the vapor passed through the economizer horizontally and the fresh air vertically. The general trend now is to reverse these conditions, and to pass the vapor vertically. Many recent installations, however, are very similar to those first designed. The efficiency of the economizer seems to be about the same in either case and it is usually the building conditions that determine just which method of handling the vapor should be used.

It has been found that in many cases more heat can be recovered from the waste vapor than is needed for the machine room. This has led to an extension of the machine room system to other departments. One mill is heating the beater room and finishing room as well as the machine room with the waste heat in the vapor from the two machines in the room without the use of additional steam. There are several mills that are heating one or more rooms in addition to the machine room. These include screen rooms, decker rooms, finishing rooms, store rooms, beater rooms and even offices. When this is done the air gradually finds its way back to the machine room and assists in its ventilation.

Use of Booster Coils

A booster beater coil is generally furnished with each economizer to take care of the periods when the paper machine is not operating and to bring the temperature of the air from that leaving the economizer to that required for properly taking care of the heating conditions. These booster heaters are equipped with automatic control valves for controlling the amount of steam entering booster coils.

There are installations where the vapor from one machine is sufficient to heat most of the air of a two machine mill. This makes not only an economical system to install but leaves the vapor from the second machine to be used for heating other parts of the mill if it is desirable to install an economizer for this purpose. There is one mill where economizers on two machines are heating the air for the machine rooms containing four machines. To do this it is necessary to have unusually hot and highly saturated vapor, a condition that would not be encountered in the average mill.

Benefits of Economizer

I will not attempt to give figures on the actual saving involved by the installation of a Briner Economizer, but when we realize that about 25 to 50 per cent of the steam used for the drying of paper is used for heating the air for carrying away the moisture given off by the paper, and that a large portion of this heating steam may be saved by an economizer utilizing the exhaust vapor, it will be seen that this vapor is something that the average mill cannot afford to throw away. The saving involved in the foregoing can be figured in dollars and cents, but there are various other factors which are not to be overlooked. An admirable feature of the economizer is that the lower initial temperature of the incoming air, the greater the amount of waste heat recovered. This means that the steam required for heating varies very little during the entire year, which takes a very heavy load off the boilers at a time when it is very desirable to level the peaks.

The Baxter Grinder Room Exhaust System has been described and it was explained that the vapor, being hot, was able to carry a very high percentage of moisture. From successful experience with the vapor from the paper machine, it was known that this vapor was ideal for an economizer installation. The vapor was collected from the grinders by flues and carried to an exhaust fan located in a convenient place in the room and the vapor blown to the outside. It was a fairly simple matter, therefore, to install an economizer for recovering some of this waste heat, and using it for heating the fresh air supplied. This installation was worked out in a manner similar to a machine room outfit and, as was expected, the exhaust vapor from the grinder proved to be ideal for heating and greatly reduced the amount of steam required for heating the grinder room.

No attempt has been made to give details of the experimenting and designing of the systems and the development of the economizer, but I have tried to show the results obtained by this work. There is no doubt that a great advance has been made in the art of heat recovery for pulp and paper mills in the last few years and let us hope that it will continue to develop in the future.

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Power Requirements for Pumping Paper Stock

By Russell K. Annis[1]

At the American Pulp and Paper Mill Superintendents' convention at Richmond, Va., in May, 1927, M. B. MacNeille, manager of the pump division of Fairbanks, Morse & Company, and an Associate Member of the Technical Association of the Pulp and Paper Industry, delivered an address on the subject of "Developments in the Pumping of Paper Stock." It is the purpose of this paper to report the further studies that have been made on this subject.

It is practically impossible for a centrifugal pump of the conventional type, having sharp impeller blades, to pass particles of fibrous material without clogging. Such material quickly catches on the sharp blade ends at the entrance to the impeller and is held thereon by the water stream lines passing through the pump. As more material comes through it packs on and the pump finally is entirely choked and must be opened and cleaned. One of the most recent interesting developments in pumps for handling paper stock is the Fairbanks, Morse stock pump patented by A. B. Wood. This pump has already shown highly satisfactory results in the handling of paper stock of various consistencies in a number of mill installations. This type of pump was designed for the New Orleans Sewerage and Water Board in the development of a centrifugal pump which would pass large solids, stringy material, trash, leaves, rags, and other material that is invariably found in sewage.

The Requirements of Sewage Pumps

The City of New Orleans had experienced much difficulty and many interruptions of service due to clogging and stopping of the equipment that it was using. This convinced Mr. Wood that there

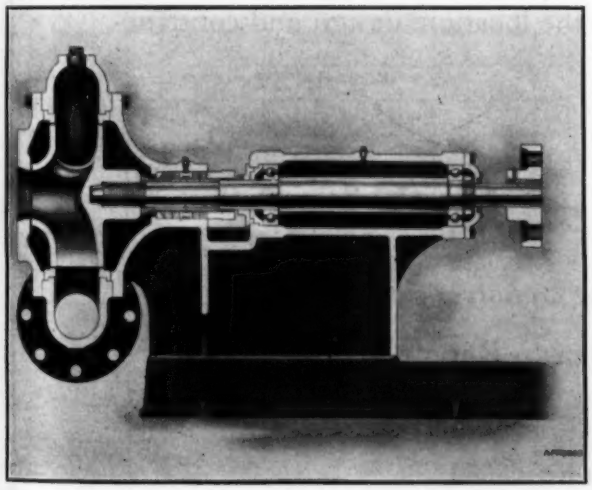

FIG. 1

Sectional view of Fairbanks-Morse paper stock pump of the two blade type.

was a need for better pumps and he originally set out to develop a pump which would meet the following conditions:

1. Pass solids almost as large as the discharge or suction openings of the pump.
2. Handle twigs, rags, roots, leaves, etc., without clogging.
3. Develop very steep capacity-head characteristics so that a strong reserve pressure would build up when trash or foreign matter tended to clog up the pipe lines.
4. Be readily cleanable in the event of large foreign bodies entering the suction pipe too large to pass through the impeller.
5. Develop reasonable efficiencies over a wide range of capacity.

About three years ago, Fairbanks, Morse & Company secured the manufacturing and selling rights under the Wood patents and

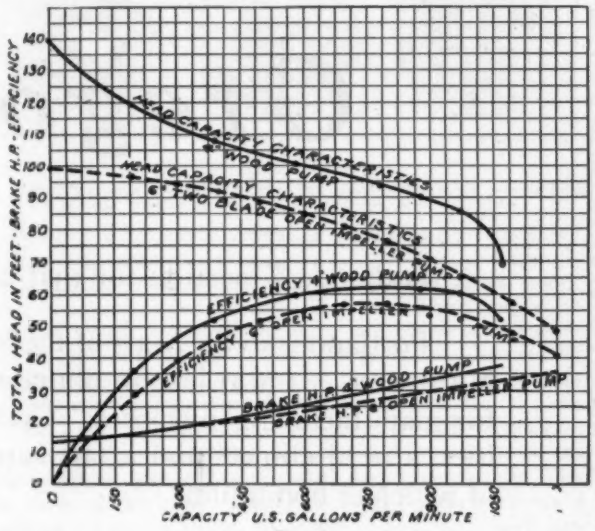

FIG. 2

Comparative performance of a 4 in. Wood pump and a 6 in. pump having two blade open impeller construction which is an attempt to imitate the Wood pump without infringing on the patents.

immediately thereafter its sales organization encountered and presented to its engineers, many new and interesting industrial problems for the application of Wood pumps, among which was the pumping of paper stock.

Description of the Wood Pump

The impeller of the pump has very open waterways with smoothed edges that will pass any materials that enter, regardless of shape or texture, up to the dimensions of a sphere in diameter equal to that of a pipe one size smaller than the discharge opening of the pump. The outward appearance of the Wood pump resembles the ordinary clear water, side suction, centrifugal pump intended for heavy duty. At the entrance the blades are rounded on a considerable radius and are filleted with the sides or shrouds with a considerable radius, so that throughout the impeller waterways there are no sharp edges, corners or projections on which materials may catch and clog. Two blades are provided as Mr. Wood sought in his design to reduce the number of impeller passages to the minimum required for balanced rotation and symmetrical construction. It will be noted that the blade gradually tapers to a narrow edge at the outer periphery of the impeller and that the blade end occupies but little of the periphery. Further, the form of the blade is such that a strong wedging action described by Mr. Wood as a coughing action is exerted on materials passing through the impeller while they are being discharged into the pump casing. It is apparent that mechanical and hydraulic balance are impossible in any design having less than two blades. The cross sectional view of the Wood pump (Fig. 1) clearly illustrates its enclosed impeller construction, the large clearances provided throughout, the rugged shaft mounted on ball bearings, and the absence of bearings within the pump case which would be affected by materials passing through the pump.

[1] Pump Division, Fairbanks, Morse & Company, Inc., Chicago, Ill.

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Pump Performance Experiments

It is interesting to study the performance of a 6-inch pump having two blade open impeller construction of the older design as compared with the performance of a 4-inch Wood pump. Both pumps are equipped with impellers 11 inches in diameter and both are tested, at a speed of 1,750 r.p.m. by the same Sprague dynamometer. The solid lines (Fig. 2) indicate the characteristics of the 4-inch Wood pump and the broken lines indicate the characteristics of the 6-inch open impeller pump. Of noteworthy interest is the high shut-off head developed by the 4-inch Wood pump which reaches the value of 140 feet as compared with 99 feet, the shutoff head developed by the older design. Mr. Wood's wedging blade form is responsible for this difference and for the fact that a higher head throughout the pump's effective working range is developed with better efficiency and with little change in the horsepower consumed. It is further interesting to note that the 4-inch Wood pump falls very little short of pumping the same quantity as the 6-inch pump with which it was simultaneously tested.

Impeller Improvements

After Wood pumps had been applied to pumping paper stock and various experiments had been conducted, it was Mr. Wood's opinion that the heavier stocks, such as high density kraft, could be handled more efficiently if the impeller blades were brought back into the impeller eye and tapered to the center of the hub so that the blades could take hold of this heavy material at the very center of the shaft and begin forcing it outward to the pump case. This impeller (Fig. 3) has been found very effective in handling power stock, since it eliminates the tendency of the strong suction existing at the impeller entrance to separate the water from the stock, which tendency is found in most centrifugal pumps when heavy stock is handled. When coarse stocks, such as bagasse, are being

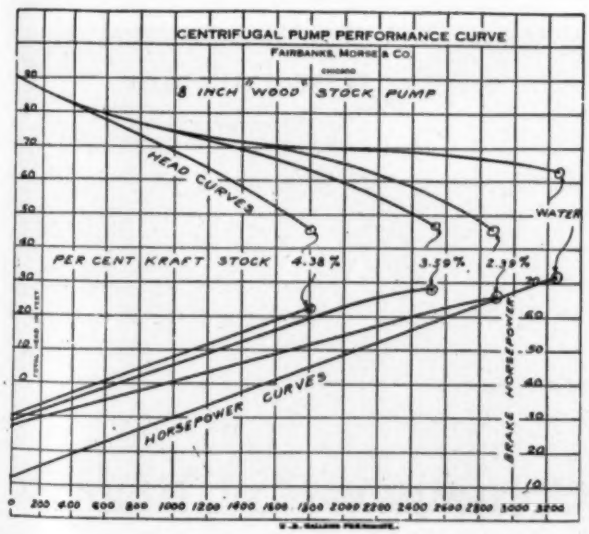

FIG. 4

Curve showing the effect of various consistencies of kraft stock on the head and horsepower of an 8 in. pump.

pumped, this tendency to pull the water away from the stock is particularly pronounced. This type of impeller is at present being fitted to all Fairbanks-Morse A. B. Wood patent centrifugal pumps for paper stock, and patents have been applied for on this new feature.

Applications of the Wood Pump

Since Mr. MacNeille presented his paper much progress has been made with the Wood paper stock pump. There are now more than seventy of these pumps in operation, and the experience and data derived from these installations are very enlightening. These installations include pumps of all sizes from 3 to 8 inch. The 3-inch pumps have been used principally on lime sludge and white water. The 4-inch pumps have been used to handle a wide range of material, including paper stock up to 4 per cent at 300 gallons per minute. The 4-inch pumps have also been used with excellent results for handling caustic sludge up to 25 per cent. One 4-inch pump at the St. Lawrence Paper Mills is used to empty the stock

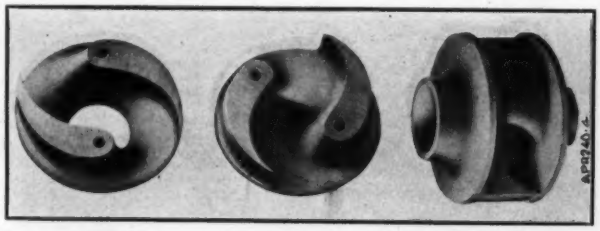

FIG. 3

A "Wood" patented impeller with one view showing the whole impeller and the same impeller sectionalized to show the shape of blades.

chest every week and is satisfactorily handling thin stock and tailings under difficult conditions.

The Tumwater Paper Company has two 4-inch pumps, one of which is unusual in that it is a vertical pump. This is one of the standard designs for handling sewage and is satisfactorily handling 4 per cent broke stock. The 5-inch pumps are also used for a wide range of service, including the handling of 5 per cent unbleached sulphite paper stock at 470 gallons per minute.

The Great Northern Paper Company, of East Millinocket, Maine, has six 5-inch pumps for handling 3 per cent stock and these replaced other stuff pumps which were unsatisfactory. This service is difficult in that a pump of very steep characteristics is required for feeding a paper machine in order to get a fairly constant capacity.

Perhaps the most popular size for general use in a paper mill is the 6-inch pump; it will handle kraft stock up to 6 per cent. The Brown Company has a 6-inch Wood pump at Latuque, Quebec, and this pump is equipped with a pulley for belted service. It has been found to give satisfactory service. There have been only a few installations requiring capacities greater than can be handled by 6-inch pumps. Wherever such conditions had to be met, an 8-inch pump has been used. At least three pumps are being used for handling stock at densities of 5 per cent and over.

Determination of Power Requirements

In planning a pump unit for handling paper stock one of the most vital questions is the determination of the power required. This depends upon a great many factors, and it is doubtful whether any system of mathematics will ever be developed which will indicate the power requirements of a paper stock pumping job with scientific accuracy. There are, however, practical methods of arriving at power requirements which have been found to be adequate. The capacity requirements, and the static head (otherwise referred to as the vertical lift) are always easy to determine. Unfortunately, however, the head against which the pump actually works is always considerably higher than the static head, as there is always some pipe friction. Usually the pipe friction is greater than the static lift itself. The friction depends upon the kind of stock being pumped, its consistency, the capacity of the pump, the size and length of the pipe line, and the number of fittings. The kind of pipe being used is also an important feature, as a wood lined pipe is smoother than a galvanized spiral pipe; and the spiral pipe is smoother than a rough cast iron or wrought steel pipe.

In the last analysis, therefore, the friction of paper stock in a pipe line must be determined by experimentation and is not strictly subject to ordinary mathematical calculation. Fortunately, how-

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ever, tables are available which are approximately correct, if they are used with reasonable care. So far as we can learn, these tables have all been derived from a single set of experiments and for that reason one table cannot be used as a check on another for its accuracy.

Status of Textbook Data

We have come to this conclusion after reading the chapter, "Total Working Head," in the textbook known as *The Manufacture of Pulp and Paper.* This is a textbook of modern pulp and paper mill practice prepared under the direction of the Joint Executive Committee on Vocational Education, representing the pulp and paper industry of Canada and United States. It is a very complete work and it is perhaps the latest authority on paper mill technique as it was issued in 1925. Nevertheless, the admission is made in this text that about all the information available bearing on this subject is based on a series of extensive and exhaustive tests made in 1907 by E. J. Trimbey at the Glens Falls plant of the International Paper Company. Since that time paper mill practice has gone through some important changes and tables which were satisfactory then, today often prove to be inadequate.

The pipes used in the experiment were spiral, galvanized iron pipes. Both ground wood and sulphite stock were used and gave practically the same results. However, no tests were run on kraft or rag stock. Undoubtedly the friction of kraft stock is much higher than for either ground wood or sulphite stock, and perhaps the friction of rag stock or news print is considerably lower. The condition of the inside surface of the pipes has a large influence on the friction met with, but we do not have any data showing how much influence the condition of the surface exerts.

The tables do not show the friction of any stock heavier than 4 per cent, although we know that stocks up to 6 per cent are being handled by centrifugal pumps. There do not appear to be

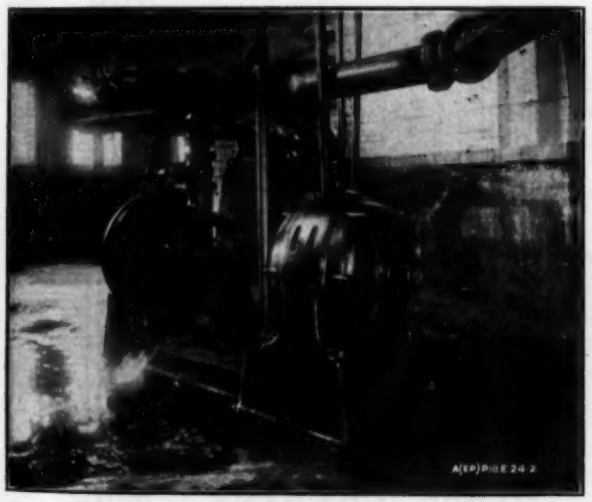

FIG. 5

8 in. Fairbanks-Morse paper stock pump in the Eddy Paper Company's mill at Three Rivers, Michigan, handling as high as 6 per cent stock.

any data available regarding the friction of paper stock beyond 4 per cent, and when we encounter these heavier stocks the friction must be estimated. The important point about all of this is that when we work with pipe sizes other than 6, 8, 10 or 12 inch, or when we work with other kinds of pipes than spiral riveted galvanized iron, or when the stock is heavier than 4 per cent, or when the stock consists of other material than ground wood or sulphite, we are working more or less by guess, and the result must be an estimation. Further than this, there appear to be no data available on the friction produced by elbows, and it is evident that an elbow will produce a large amount of friction in the pipe line, especially if a short radius elbow is used.

Importance of Steep Pump Characteristic

On account of the fact that the frictional head, and therefore the total head on the pump, is always more or less of an indefinite matter, a pump with a steep characteristic will always be a more satisfactory installation. The reason for this is that in case the

FIG. 6

6 in. Fairbanks-Morse paper stock pump at the Bogalusa Paper Company, Bogalusa, Louisiana. This pump handles 5.7 per cent stock.

head is a few feet higher or lower than that which is estimated in advance, a pump with a steep characteristic will deliver very nearly the estimated quantity of stock, in spite of any discrepancy in the head. If, however, the characteristic of the pump is quite flat, a few feet more or less in the head may cause the pump either to discharge altogether too great a quantity, or its discharge may be seriously diminished or cut off and deliver nothing at all. The Wood paper stock pump has a very steep characteristic on account of the wedging action of its blade.

Influence of Consistency on Performance

In the same text to which we have referred, there is a chart which shows the influence of various consistencies of paper stock on the performance of a pump. This chart would indicate that it is impossible to pump paper stock of heavier consistency than 4.5 per cent. This was undoubtedly true with the type of pump available in the year 1907. Today, paper stocks of 6 per cent and even heavier are being pumped but so far there is little known regarding the performance of the pump handling the heavy stocks as compared to the same pump handling water.

Tests at Thilmany

Recently a series of tests were run by the Thilmany Pulp & Paper Company at Kaukauna, Wis., on an 8-inch Fairbanks-Morse Wood paper stock pump, and a chart (Fig. 4) has been prepared showing the relation of the performance of this pump handling stock of various consistencies, compared with the performance of the same pump handling water. The data indicated in the chart are interesting and undoubtedly the relation will hold more or less for other makes of pumps and for other sizes than the one on which the test was run. However, the further away we get from the same size of pump and from the same design of pump, the more remote we will be from a reliable calculation. One thing is clearly demonstrated by these tests, and the same thing will probably hold with other sizes of pumps; that is, the fact that the maximum horsepower as shown by a water test in the hydraulic laboratory will not be exceeded when the pump is han-

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dling stock irrespective of how high the consistency may be. In other words, if the motor is large enough to drive the pump against any head, high or low, when handling water, it will be large enough to drive the same pump when handling any kind of stock against any head. This fact may seem unreasonable, but when it is remembered that a heavier stock limits the capacity of the pump, it is easy to understand how it also affects the horsepower requirements. As an example of this, the pump tested at Kaukauna uses a maximum of 72 horsepower when delivering 3,300 gallons per minute of water. The same pump required a maximum of 66 horsepower when delivering 2,800 gallons per minute of 2.39 per cent stock, and it required only 62 horsepower to handle 4.38 per cent, but the capacity was reduced to 1,800 gallons per minute.

Selecting the Right Pump

Once having determined or estimated the head against which the pump operates, it is a simple matter to determine the horsepower required to drive the pump. The stock head is converted to the equivalent water head by taking a ratio between a water test and a paper stock test. The proper pump to deliver the required capacity against this corrected head is then selected. The size of the driver should be chosen to correspond to the maximum horsepower required by the pump when pumping water.

Perhaps, after all, the most practical way to plan a paper stock pumping installation is to compare the conditions with an installation that is already in operation. This may seem a little difficult to do but a complete detailed record of between seventy and eighty installations will invariably reveal at least one or two installations which are quite close to the required conditions. The Wood pump which was originally designed for handling unscreened sewage is now being used in paper mills on practically every kind of work.

Several improvements are being made in the impeller design, the casing, and the general mechanical construction. The casing is being split on an angle of 45 degrees so that it can be cleaned and inspected more quickly. Shutdowns in a paper mill are expensive and if the top half of the casing can be quickly removed without disturbing pipe lines, repairs can be made in a fraction of the time required by many pumps that are in use.

The impeller will have a larger number of blades, as we have found that the two blade impeller has placed certain limitations on the diameter of the suction eye. This is required because each blade must be long enough to lap the one next to it and when such a length of blade is furnished, it has a tendency to reduce the diameter of the suction. On the new pumps, three and even a larger number of blades will be furnished as required. These are placed in such a manner as not to restrict the passages and yet they give a large size of opening to the suction so that a reducer in the suction line will no longer be necessary. Furthermore, the blade angle and other features are being designed in such a way as to give a higher efficiency and an even steeper characteristic curve. The discharge of the new pumps will be upward and the suction will be horizontal. This is the usual arrangement that is required by the average paper mill, and the object is to make a pump suitable for as large a number of conditions as possible. In the majority of mills the pump is placed on the same level as the bottom of the stock chest or else it is placed immediately below the stock chest and the discharge is vertically upward to an upper floor.

Work Still To Be Done

There is still a great deal to learn about the power requirements for pumping paper stock. If we have done nothing more than to present the problem, without offering a solution, we have accomplished little. We hope we have contributed more than that. There is much yet to be found out in regard to the most economical size and kind of piping. There is much to be learned in regard to the friction caused by all kinds of paper stock in pipe lines. The power required by a pump is easily determined after all other conditions are known. The most important unknown factor is the friction of the material itself, and it is hoped that further research and development will offer enlightenment on this phase of the subject in the very near future.

A considerable amount of experimental work and observation of mill pump performance will be continually carried out by Fairbanks, Morse & Company and companies in the paper industry.

Pump Installation Statistics

Following are data showing the services and operating ratings of the Wood patent pumps of Fairbanks, Morse & Company installed in paper mills:

Service	G.P.M.	Head	H.P.	Mill
THREE-INCH PUMPS				
Lime sludge	x	x	x	Northwest Paper Co., Cloquet, Minn.
White water	400	40	x	Bogalusa Paper Co., Bogalusa, La.
White water	400	40	x	Bogalusa Paper Co., Bogalusa, La.
White water	400	40	x	Bogalusa Paper Co., Bogalusa, La.
FOUR-INCH PUMPS				
Heavy lime sludge (25%)	500	30	10	Brown Paper Mill Co., Monroe, La.
Caustic sludge (25%)	500	30	10	Brown Paper Mill Co., Monroe, La.
Thin stock & slivers	x	x	x	St. Lawrence Paper Mills Co.
Green liquor	500	50	15	Brown Paper Mill Co., Monroe, La.
Green liquor	500	50	15	Brown Paper Mill Co., Monroe, La.
Paper stock (4)	250	40	15	Nashua River Paper Co., E. Pepperell, Mass.
Screen rejects	100	10	10	Brown Paper Mill Co., Monroe, La.
Screen rejects	100	100	10	Brown Paper Mill Co., Monroe, La.
xxx	550	40	15	Bogalusa Paper Co., Bogalusa, La.
xxx	550	40	15	Bogalusa Paper Co., Bogalusa, La.
xxx	550	40	15	Bogalusa Paper Co., Bogalusa, La.
Paper stock (4%)	300	60	15	Tumwater Paper Co., Oregon.
Broke stock (4%)	300	30	25	Tumwater Paper Co., Oregon.
Ground wood (3%)	xx	75	25	Occident Pulp & Paper Co., Edmonds, Wash.
FIVE-INCH PUMPS				
Bagasse	x	x	x	Celotex Co., New Orleans, La.
Lumpy stock (½%)	1,000	32'	Belted	Rogers Paper Mfg. Co., South Manchester, Conn.
Paper stock (4.5%)	400	75'	20	Champion International Paper Co., Lawrence, Mass.
Bagasse (4%)	500	93'	40	Bagasse Products Co., Tuinucu, Cuba.
Bagasse (4%)	500	93'	40	Bagasse Products Co., Tuinucu, Cuba.
Bagasse (4)	500	75'	Belted	New Haven Pulp & Board Co., New Haven, Conn.
Paper stock (3%)	445	60'	30	Great Northern Paper Co., Millinocket, Me.
Paper stock (2.7%)	435	54'	20	Great Northern Paper Co., Millinocket, Me.
White water	1,000	85'	35	New Haven Pulp & Board Co., New Haven, Conn.
Paper stock (4.5%)	400	75'	20	Champion International Paper Co., Lawrence, Mass.
5% unbleached sulphite	470	50'	25	J. & J. Rogers Co., Ausable Forks, N. Y.
Stuff pump—(3%)	550	50'	20	Great Northern Paper Co., E. Millinocket, Me.
Stuff pump—(3%)	550	50'	20	Great Northern Paper Co., E. Millinocket, Me.
Stuff pump—(3%)	550	50'	20	Great Northern Paper Co., E. Millinocket, Me.
Stuff pump—(3%)	550	50'	20	Great Northern Paper Co., E. Millinocket, Me.
Rag stock (4%)	x	x	15	Neenah Paper Co., Neenah, Wis.
Paper stock (4%)	205	42'	10	National Folding Box Co., New Haven, Conn.
SIX-INCH PUMPS				
Kraft stock (5.7%)	306	73	20	Bogalusa Paper Co., Bogalusa, La.
Paper stock (3 to 4½%)	300	97	30	Brown Paper Mill Co., Monroe, La.
Cooked straw	x	x	Belted	The Paraffine Co., Inc., San Francisco.
Paper stock (3%)	1,000	60	Belted	United Paperboard Co., Whippany, N. J.
Paper stock (4%)	1,400	20	20	Continental Paper Co., Bogota, N. J.
Paper stock (5%)	232	70	20	Toronto Paper Mfg. Co., Toronto, Ohio.
Paper stock (5%)	400	100	50	Bogalusa Paper Co., Bogalusa, La.
Paper stock (5%)	1,200	35	Belted	Byron Weston Co., Dalton, Mass.
Kraft stock (5%)	900	60	50	Brown Paper Mill Co., Monroe, La.
Kraft stock (5%)	600	40	30	Brown Paper Mill Co., Monroe, La.
Kraft stock (5%)	600	40	30	Brown Paper Mill Co., Monroe, La.
Kraft stock (5%)	600	40	30	Brown Paper Mill Co., Monroe, La.
Kraft stock (5%)	300	50	30	Brown Paper Mill Co., Monroe, La.
Paper stock (0.2%)	1,500	60	40	Brown Paper Mill Co., Monroe, La.
Kraft stock (5%)	600	60	50	Brown Paper Mill Co., Monroe, La.
Save-all	2,250	15	x	Neenah Paper Co., Neenah, Wis.
Paper stock (3%)	1,200	40	30	United Paperboard Co., Urbana, Ohio.
No record	2,100	31	50	Fletcher Paper Co., Alpena, Mich.
Paper stock (3%)	800	60	40	Bogalusa Paper Co., Bogalusa, La.
Six 6-inch pumps	x	x	x	Brown Corp., Latuque, Que.
Paper stock	400	69	30	Massasoit Mfg. Co., Oakdale, Conn.
Ground wood (3.2%)	20 ton	100	75	International Paper Co., Three Rivers, Que.
Paper stock (2.5%)	1,000	61	50	A. P. W. Paper Co., Liberty Mills.
Paper stock (2.5%)	1,000	61	50	A. P. W. Paper Co., Liberty Mills.
Paper stock (3.5%)	1,000	32	20	A. P. W. Paper Co., Liberty Mills.
Paper stock (3.5%)	1,000	32	20	A. P. W. Paper Co., Liberty Mills.
Paper stock (4%)	415	60	40	Michigan Carton Co., Battle Creek, Mich.
EIGHT-INCH PUMPS				
Paper stock (5¼%)	2,400	65	75	Eddy Paper Co., Three Rivers, Mich.
Paper stock (5%)	1,500	40	40	Robert Gair Co., Montville, Conn.
Paper stock (6%)	1,500	45	75	Clifton Paper Mills, Clifton, N. J.

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Artificial Grindstones, Anti-Friction Bearings and Vacuum Thickener Developments

By W. E. Brawn[1]

During the past few years there has been considerable interest displayed in the development of special equipment for groundwood mills and in the improvement and redesigning of standard equipment. Experiments with artificial grindstones have been conducted for a long time but in the last few years there apparently has been a renewed interest and there have been some very interesting developments. The makers of anti-friction bearings, notably the S. K. F. Industries, Inc., have taken up the application of their bearings to grinder installations in a practical way. The principal makers of groundwood screens have completely redesigned their equipment. The makers of vacuum filters have successfully demonstrated that their equipment can be very economically used in combining the use of deckering with that of stock saving, all of which indicates that the manufacture of groundwood is finally coming to be recognized as one of the most important branches of paper making.

Artificial Pulp Stones

Artificial stones are now in production in two types, one of which is made up of carborundum and the other, which is newer and is still somewhat in an experimental stage, is made from natural quartz. The advantages claimed for artificial stones are that they can be duplicated exactly and when a stone of desired characteristics has been obtained, exact duplications of it can be secured and grinding conditions in the mill can be maintained uniform. The disadvantage usually feared by the operators is that it will not be possible to secure an artificial stone that will duplicate the type of stock which any particular mill has found to be desirable for the grade of paper which it makes. Another difficulty has been that the stones have not "stood up" until they were completely worn out.

Grinder Stone Experiments at Pejepscot

The following experience of the Pejepscot Paper Company with the use of artificial stones is probably more or less representative of the early experience of most companies that have used them.

We have used several of these stones during the past four or five years, and something has happened to each one before its life was completed. The last stone we had, however, gave us very good service before it broke, and its record is the one I wish to give you.

The stone on which we wish to report was installed February 3, 1927 and was taken off September 16, 1927. During this time it operated 188.2 grinder days and ground 1,046.25 cords. This gave us 5.55 cords per grinder day. The original dimensions of the stone were 27 inches wide by 54 inches in diameter and the final diameter at the time it was taken off was 53.5 inches. The cubic inches of stone worn away in the grinding of 1,046.25 cords was 1139. On the basis of 1.1 tons per cord which is approximately our yield—we therefore ground 1,150 tons of pulp with this 1,139 cubic inches, which was one cubic inch per ton of pulp.

The cost of this stone to us was 10 cents per cubic inch; our stone cost was therefore 10 cents per ton of pulp ground.

This stone was installed on one of our waterwheel driven lines having two stones. The waterwheel rating for two grinders is 850 horsepower. The line operated an average of 189 r.p.m., the speed being controlled by a Meyer governor. The average pressure was 96 pounds in a 10 inch cylinder, and pocket dimensions for holding wood are 14 by 26 inches.

[1] Member, TAPPI. Pejepscot Paper Company, Brunswick, Me.

The average freeness was 178, tested in an A. B. Green old style freeness tester.

The average grinding temperature was 144 degrees F.

The average grinding consistency was 4.90 on a bone dry basis.

The Nature of the Stone and Freeness of Pulp

During the entire life of the stone it was sharpened thirty-seven times with a spiral burr, ten cuts to the inch, and a 3-inch lead. We experimented with different burrs, but found that it did not make very much difference what burr was used as it is the grit in the stone which does the cutting.

The high freeness of this stock led us to believe that there was a considerable waste due to coarse ground pulp and we set up a two plate flat screen equipped with 14 cut plates and ran numerous tests for screenings. We found that the rejections from stock ground on the artificial stone were no different than from a freshly sharpened sandstone. The stock was naturally free, the fiber long, and almost a complete absence of sawdust and stubby shives. In replacing this stone we asked the manufacturers to give us one of slightly finer grit.

The stone on which the foregoing record is based was their No. 30 grit stone. We had previously tried a 24 grit and knew from experience that the fiber from a stone of that grit would be too coarse for us. We feel that the 30 grit makes pulp just a little bit too free and are therefore going to try out the 36 grit in the stone which we expect to have installed in about a week. We have every reason to believe that the 30 grit stone will meet all of our requirements.

We have found generally that the artificial stone gives us an increased production over sandstones, produces more uniform pulp, does not require as frequent sharpening and therefore results in saving in burr cost. If these stones could be made to last out their complete life, they should be good for seven to ten years, therefore resulting in considerable saving in cost of changing stones.

We plan to continue experiments with these stones with the idea of finding the type of stone which can be put into each one of our grinders.

We might say in passing that the artificial stones are now covered with a guarantee which agrees to replace any stone that breaks before lasting out its complete life.

Anti-Friction Bearings on Grinders

At the Itasca Paper Company one grinder has been equipped with anti-friction bearings. This grinder is a four pocket type using a 27x60 inch stone and is equipped with a 1,000 horsepower synchronous motor, one stone to the shaft. With a natural sandstone this grinder was run thirteen days, October 27, 1927 to November 8, 1927, inclusive, with plain bearings. During this period the average freeness was 76 on a Green old style freeness tester, tests being run at 0.4 per cent density, 1,000 cc., and 15 degrees C. temperature. The production during this period was 171.5 tons. The power consumed was 174,060 kwh or an average of 1,015 kwh.

This same stone was then mounted on the anti-friction bearings and run for a period of sixteen days, November 13, 1927 to November 28, 1927, with the following results:

Average freeness 75, on the same basis as above, production 212.4 tons, power consumed 202,420 kwh. or an average of 953 kwh. per ton. This indicates a saving in power of 6.1 per cent.

This grinder was then equipped with an artificial stone and

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anti-friction bearings and run for a period of forty-one days December 12, 1927 to January 22, 1928, with an average freeness of 136; production during this period 593.4 tons, power consumed 558,860 kwh. or an average of 941 kwh. per ton. This shows a saving of 7.3 per cent over the plain bearings and the natural sandstone, though the freeness in this case was run considerably higher than in the previous case.

From a mechanical standpoint, the bearings are excellent and require practically no maintenance. In the past considerable difficulty was experienced in starting up this grinder with plain bearings. With the use of anti-friction bearings, however, it is possible to start the stone at high speed without any trouble.

The value of this power saving, of course, would vary with power costs in any particular location. Tests in other mills indicated a greater power saving than that recorded here and the installation is still under study to discover why a greater saving has not been realized.

The pressure water is supplied to this grinder with a 2½ inch pipe leading from a 4 inch pipe which supplies other large grinders. It is thought that there is some loss in efficiency because the pressure is not being maintained constant and a larger line is now being installed.

Vacuum Type Deckers

At the Itasca Paper Company a vacuum type groundwood decker has been installed for the dual purpose of taking the place of a groundwood decker and white water saveall by combining the operations as follows:

All of the excess white water from the paper machine department is piped back to the groundwood mill and the white water in the groundwood system is so arranged that if there is an overflow it will come from the vacuum type decker. It was found that because of the use of fresh water showers on the paper machines, that there was an excess of about 300 gpm of white water. When the standard type deckers were used the stock in the white water was found to be about 7½ pounds air dry per thousand gallons, making a total daily loss of about 3,240 pounds per day. With the vacuum type decker the density of the white water going to waste was reduced to about 1.5 pounds air dry per thousand gallons. This gives a total daily waste of 719 pounds air dry stock making a daily saving of 2,521 pounds which, if valued at $30.00 per ton, for a 300 day year would amount to $11,344 saving per year. At the same time this decker is thickening about 30 or 35 tons air dry stock per day and consuming less than 4 horsepower for operation.

Automatic Grinder Development

By A. E. Parrett[1]

When asked to prepare a paper on newer developments in mechanical equipment or present tendencies along the line of mechanical installations of grinders, I hesitated, for there has been so much written and also not written (for various reasons) that one must be careful of the substance of his report. Practical pulp and paper makers and engineers have taken diametrically opposite viewpoints in explaining why a particular type of magazine grinder in which they are interested, possesses advantages which make it superior to others. In view of this fact and as I believe each has advantages and disadvantages peculiar to the type, I shall limit the brief remarks following to a more or less general discussion, rather than to an argument presented from one viewpoint only.

I do not believe that the construction or selection of grinders during the past five years has followed any particular line, either as regards size or type. Whether it is of the four pocket, Waterous (also called magazine), Warren, Voith, or Continuous type, each has been installed and is performing satisfactorily under the conditions at hand. There are companies that have in operation two and sometimes three different types of grinders in the same pulp mill and when approached directly with the question "Is this type better than that" reply indirectly saying. for instance, "Well, we get a better quality of pulp from this type but our stone cost per ton is higher, due somewhat to low production, and our labor cost is higher, but lubrication lower, etc."

The first magazine grinder was the Waterous, or hydraulic grinder, having intermittent feed; then followed the Warren type having chains instead of hydraulic cylinders, giving continuous feed. About the same time the Voith appeared in Germany, having a different type of feed chain motor and a wider magazine. Then followed the continuous type, a cross more or less between the two preceding types embracing the best points of design of each into the new type. I learned just recently that a large mill in the Province of Quebec is operating a grinder having both feed chains and pressure feed. This causes one to pause and wonder what the next step will be. The extent to which we can carry the width of the magazine or size of the grinder has depended in the past on the size of grinder stone which we can safely quarry and operate. But with the advent of the artificial stone, it is not beyond the bounds of possibility of making stones much larger than 54x67 inches and installing them in grinders having pockets much larger than 53 inches. Has the limit of production been reached or will future designs tend to construct grinders having capacities of 50 tons, or will we look for other means of mechanical pulp production?

I might divert from the subject here to state that our two Norton stones have been running for four months and have worn down only 1/32 inch each on the radius. For a corresponding period of time a good sandstone would have worn down about 2 inches on the radius.

It is interesting to balance the quantity and type of grinders in operation and being installed against the speed and trim and the number of paper machines for each mill. The variation is quite noticeable.

The following has been collected from a few of the most important and recent mills in Canada and Newfoundland.

VARIOUS TYPES OF GRINDERS

Warren Grinders:
8—Wayagmack Pulp & Paper Co.
2—162 inch news print machines.
6—Backus-Brooks, Ltd.
1—245 inch news print machine.

Pocket Grinders: (3 and 4)
51—3 pocket, Abitibi Power & Paper Co.
24—3 pocket, Brompton Pulp & Paper Co., Bromptonville.
1—234 inch machine.

Waterous (magazine type):
16—St. Lawrence Paper Mills, Ltd.
4—158 inch news print machines.

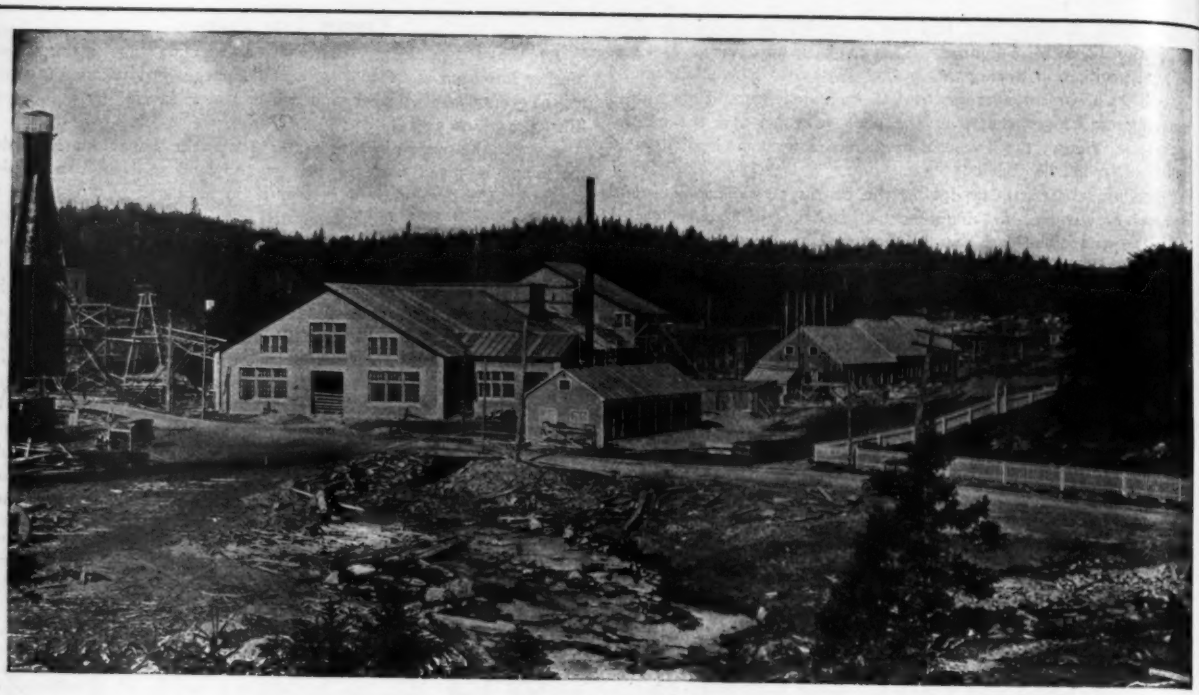
Continuous type:
22—Newfoundland Pulp & Paper Co.
4—234 inch machines (news print).
24—Canadian International Paper Co., Gatineau.
4—270 inch news print machines.
10—St. Anne Paper Co.
2—234 inch news print machines.
10—Manitoba Pulp & Paper Co.
2—234 inch news print machines.
16—Spruce Falls Power & Paper Co. (to be erected).

Voith type:
12—Price Bros. & Co., Riverbend.
2—234 inch news print machines.

Now note the number of mills which have more than one type of grinder.

Two or more types:
14—Waterous. (Canadian International Paper Co., Three Rivers.)
14—Warren.
2—4 pocket.
8—160 inch news print machines.
12—Warren. (Port Alfred Pulp & Paper Corp.)
10—Continuous.
4—212 inch news print machines.
14—Voith. (Price Bros. & Co., Kenogami.)
47—3 pocket.
2—234 inch news print machines.
5—156 inch news print machines.

[1] Junior Member, TAPPI. St. Anne Paper Co., Beaupre, P. Q.



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2—230 inch news print machines.
1—202 inch news print machine.
1—152 inch news print machine.
1—127 inch news print machine.

There are many others too numerous to mention and it might be remarked that there are more mills having two or more types of grinders than there are mills equipped with only one particular type.

Variations in Pressure Feet

The magazine grinders have two pressure feet which are made as high as 30¼ inches, although two large mills recently equipped with this type (Anglo-Canadian at Limoilou and Lake St. John at Misstassini) have pressure feet of only 25½ inches. The size of pressure feet in magazine grinders is, of course, dependent upon the mechanical arrangement, as you have to take care of two pressure feet and the stone sharpening device is located between them.

The manufacturers claim that with the lowering of the pressure feet and changing of the operating valves, the jamming in the magazines has been eliminated and the interval between grinding and filling the magazine has been reduced so that only a few seconds are lost in the grinding process. In the performance of the latest magazines, the grinding, although not continuous, is almost continuous and as a result the capacity of the new Waterous or magazine grinders has been increased from 18 tons to the new standard of 21 to 24 tons. We shall watch the performance of the above-mentioned two mills with regard to these points.

Widths of Magazine Grinders

The Warren grinders in operation have magazine widths of 30 inches (as at Wayagamack), and 30½ and 34 inches as at the International Paper Company mill, at Three Rivers, Que.

The grinder of the continuous type has widths of magazine adjustable from 39½ to 43 inches and from 39½ to 53 inches. These may be seen at the following mills: St. Anne, Manitoba, Gatineau, Port Alfred, Spruce Falls, Newfoundland, The Voiths at the two mills of Price Brothers have magazines adjustable from 39½ to 43 inches in width if necessary. Price Brothers have in operation two grinders having 53 inch width magazines. This may be the limit to which we can profitably go when you take into consideration the large size of the shaft and bearing that this necessitates.

Grinder Details

In the actual operation of the grinders, one grinder man can attend to either six Continuous, six Warren, or six Voith but only four of the Waterous type.

A point regarding the chain feed type of magazine grinder is the per cent slippage of the chains, which evidently varies according to the type of chain used. It is necessary to check the productimeters which record the number of cords ground, most accurately on this type and obtain a reliable factor for each grinder. I have found that a good way to do this is to rack and grind ten measured cords for each grinder and note the productimeter readings before and after each cord ground.

Quite a number of mills on a week-end shutdown determine accurately the amount of stone worn down per week and compare this with the number of dressings which this stone received during that week. This will give valuable information regarding the quality of the stone and the kind of burr to use, other things being equal, and has much to do with the production of a stone, irrespective of what particular type of grinder it may be.

Another point that comes to my mind is the need of a method for changing accurately the power on a grinder line in kilowatts, into terms of pressure in pounds per square inch of stone area for each stone.

Groundwood Quality Requirements

There is another important factor which will have a bearing on the quantity and type of grinders installed in a pulp mill. The latest news print machines are designed to run at 1200 and 1400 feet per minute, having suction couch, suction first presses and suction second presses. I know from experience that it requires an excellent grade of groundwood to keep a machine running at 1100 feet per minute. This slightly slower stock is obtained more readily with a load of 1500 kilowatts per grinder line, instead of 1600 or 1700 kilowatts per grinder line. Following from this will be a lower production per grinder. Hence, for these high speeds and slower stock, we will require either a larger grinder installation or a grinder having a greater capacity, but the same quality.

The Waterous or magazine grinder is approximately $4,000 cheaper than the latest continuous grinder so that a mill intending to install twenty Waterous magazine grinders say, would effect an initial saving of $80,000. On the other hand, however, a higher production can be obtained from the continuous type having feed chains. This is also accompanied by lower repair and labor costs. The Waterous Company now has a magazine grinder, claiming production equal to the continuous type. It will be extremely interesting to watch the results of two large news print mills coming into full operation at the beginning of the year, with respect to these statements. The term production or capacity of a grinder may have either one of two meanings. It may express just capacity in tons or it may mean capacity depending upon the quality of stock being made for a definite machine speed.

Grinder Construction Influenced by Artificial Stone Characteristics

I am of the opinion that grinder construction of the future will go hand in hand with the artificial stone. Even now it is definitely turning that way. The grinder line at Price Brothers, Riverbend, recently put into operation, has 53-inch magazines equipped with artificial stones. They claim production of 25 tons of good stock per stone.

The combination grinder, mentioned previously as having pressure feet and feed chains, is also equipped with a very large artificial stone.

Details of the Continuous Type Grinder

I will close with a few details regarding the continuous type of magazine grinder, with which I am most familiar. The chains are driven by a 3 horsepower, 1150 r.p.m., shunt wound, separately excited motor, through a series of spur and worm wheels and sprockets. The ratio of the torque of the motor to the pull on all four chains combined is approximately 34,000 to 1 in a 39½ inch magazine. The load on all four chains at 24 amperes, assuming the overall efficiency of motor gearing combined of 21 per cent, is 115,700 pounds. A specially designed electrically operating control connected with the three main feeder lines going to the synchronous motor regulates within close limits the speed of the feed motor operating the chains. The power supplied to the synchronous motor is practically constant. This controlling apparatus is so sensitive that when the power consumption is increased only slightly, when large or hard logs are ground, the speed of the feed motor and the velocity of the column of wood is automatically reduced. Conversely, if when grinding soft and small or green wood, the power consumption of the synchronous motor is decreased, the rotations of the variable speed motor are automatically increased and the column of wood increases in velocity down the magazine, thereby producing constant torque on the synchronous motor.

The Hydraulic Magazine Grinder

In the hydraulic magazine grinder approximately one-third of the total power used in grinding pulp is lost. This is due to the intermittent feed, not so much because of the time the hydraulic pressure is removed from the wood, but because of the time it takes to get a perfect cutting condition after the hydraulic pressure has been applied. In this connection, a period of time

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practically equal to one-third of the entire feeding time of a hydraulic pocket is required to get the grindstone at its maximum cutting efficiency and it is because of this period of inefficient grinding that the largest losses in time and power are incurred in hydraulic pocket and hydraulic magazine grinders. Then there is the loss of time due to difficulty in changing stones, sharpening stones, setting the toe pieces close to the stone, pump and accumulator troubles and jamming of wood.

On the other hand, the hydraulic grinder has a much larger grinding area and there are those that are of the opinion that one can obain a longer, finer fiber from this grinder than from any other.

To claim that one particular type of grinder is superior to others is unwise. Each type has advantages, peculiar to itself. I have seen each type in successful operation under totally different conditions. That is why we have opponents and exponents of each type—it all depends upon the particular angle from which you view the problem. I believe the artificial stone has come to stay but whether a standard magazine grinder will evolve with this, is a little difficult to predict. Our forests do not warrant further pulp and paper mill expansion and present day manufacturers will be somewhat loath to scrap and change present successful types unless great economic possibilities are evident.

Report of Groundwood Committee

By S. C. Brayton, Chairman[1]

For the past four years the Groundwood Committee of the Technical Association of the Pulp and Paper Industry has made extensive study of the use of refiners for reclaiming groundwood screening waste. This work has been largely under the direction of C. K. Andrews, first as a member and later as chairman of the Groundwood Committee. The results of these studies have been presented at previous meetings.

In order to bring this study up to date, a survey of the industry has been made this year to see to what extent refiners are being used and also to learn what other means are being used in disposing of the final groundwood screening rejections.

In response to our inquiries we have thirty-four replies giving information in regard to more than forty representative mills. These replies come from every papermaking section of the United States and Canada from the Atlantic to the Pacific and include both large and small mills as well as new mills and mills long established. We believe that no more representative expression would be possible.

Although it is not possible to give a complete summary of the replies in a report of this kind, we have sent a copy of such a summary to each mill submitting information. If others desire a copy it can be obtained by writing the Committee.

The outstanding thing that strikes one in analyzing these replies is that out of all the replies only six report that no part of the rejections is being reclaimed and of these two are mills just built in which operation is not as yet stabilized; one has been using a refiner but has temporarily, at least, discontinued its use, and the other reports that it has given the matter much consideration but has not been convinced that a refiner can economically make number one stock from the rejections. This indicates that much progress has been made and that the interest of the industry in reducing waste due to groundwood screening rejections has been aroused.

Various Uses for Reclaimed Screenings

The second outstanding thing seems to be that the majority who are reclaiming the rejections are not refining them into news print stock but are finding other means of using them. In the central west, many mills report that their rejections go into insulating board; many other mills use all or a part in the manufacture of mill paper. In Canada several mills are cooking the rejections in their kraft and sulphite mills. A few report mixing them with screenings from sulphite or sulphate mills and after refining in a jordan or other type of refiner, either use them on a board machine or sell them to board mills.

Seven mills report using refiners reclaiming 60 to 100 per cent of the rejections. However, of these only two report a closed system, one reports using a Monarch jordan and one a Voith refiner. One reports 60 to 80 per cent reclaimed as news print stock on a Valley refiner. Three report reclaiming with refiners and stone roll beaters but do not state definitely how much of the reclaimed stock is used in news print. The other mill, which is one of the largest mills in Canada, indicates that not all reclaimed stock is used in news by saying "reclaimed stock too dirty for use on news is used for making board."

Thirteen mills report more or less complete systems for checking the amount of slivers being produced. Only two or three state definitely that the amount produced is not checked. Many of those not mentioning any check report practically 100 per cent reclaimation by some means or other. Many of these mills no doubt do not consider it necessary to check the amount if it is not a complete waste.

Keep Groundwood Rejections at a Minimum

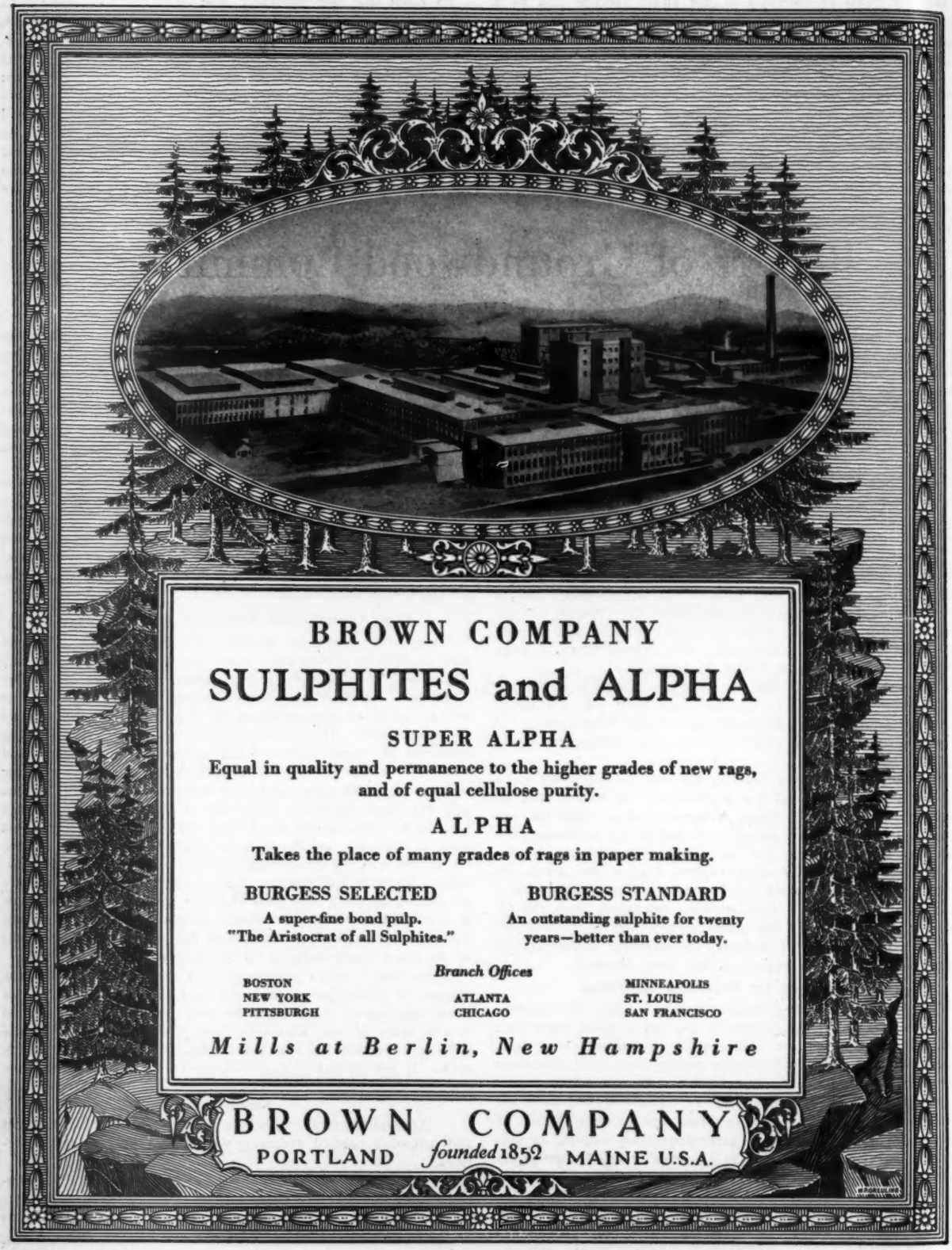
A significant statement appears in many reports. "The best way to reclaim groundwood rejections is not to make them." At the mill of the Itasca Paper Company we have found this to be true and have also proved to our own satisfaction that no one point in the operation of a groundwood mill merits closer attention. The reduction of the amount of slivers being produced of course increases the amount of good stock and raises the yield per cord and decreases the horsepower per ton, at the same time producing better fiber. In the Itasca mill the final rejections pass over a flat screen having ten cut plates. This screen has a very limited capacity so that as soon as even one grinder gets to producing too many slivers, the screen will not handle the slivers and runs over. The operators know it will continue to run over until the stones are all cutting properly and also that the management will know at once that something is wrong. Likewise, the rejections are baled daily, weighed, and sampled for moisture. This gives us an exact check daily as to the amount being produced.

In passing, I might mention that a device for checking the amount of slivers being produced by an individual grinder for use in addition to the standard freeness test, has been developed in the mills of the Kimberly-Clark Company and it is the writer's understanding that it is to be available to the industry soon. It will probably be manufactured by some mid-western manufacturer.

Summary

1. Apparently most mills are giving considerable thought and attention toward reducing waste due to screening rejections.
2. The use of refiners to produce stock suitable for newsprint does not seem to be extensive.
3. The trend seems to be to find use for the rejections in the production of by-products.
4. Complete and exact knowledge as to the percentage of rejections being made.

[1] Member TAPPI Itasca Paper Co., Grand Rapids, Minn.



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Standard Method of Preparing Test Sheets

To Determine Initial Strength of Paper Pulp Proposed by the Committee on Physical Standards of the Canadian Technical Section and the Committee on Sulphite Pulp of the Technical Association of the Pulp and Paper Industry

1. Scope

The object of the method is to serve as a contribution towards the development of an international standard method to determine strength of paper pulp.

The method is jointly worked out by the Committee on Physical Standards of the Canadian Technical Section and the Sulphite Committee of the Technical Association of the Pulp and Paper Industry and is the result of recent developments on the American continent in the field of pulp testing.

The principal difficulties which make the ordinarily used methods more or less unreliable are the production of uniform test sheets and the preparation of the pulp previous to forming it into sheets. After a thorough investigation of the factors influencing the uniformity of the test sheets the following method has been formulated which is believed, if strictly followed, to produce uniform sheets for testing purposes from unbeaten pulp regardless of the particular character of the pulp being tested.

The method consists briefly of disintegrating the pulp with only very slight hydration, then forming the sheet on a sheet machine with such a volume of water that all samples require the same length of time to drain. The sheets are next pressed in an hydraulic press at a definite pressure to a certain moisture con-

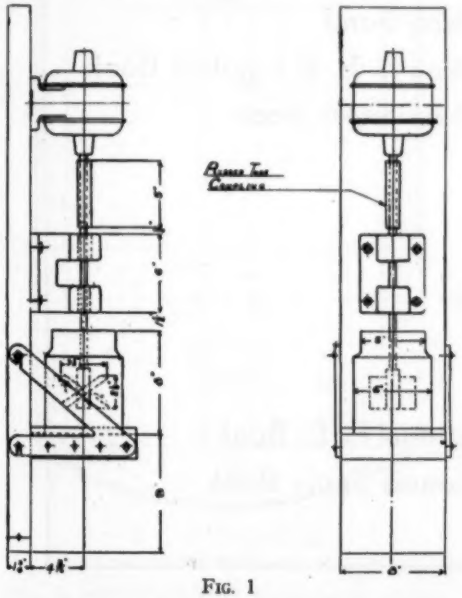

FIG. 1

tent. After pressing, the sheets are dried in an atmosphere of standard humidity and temperature conditions so that the rate of drying the sheets is as nearly uniform as possible. The sheets are then tested for strength properties under the same atmospheric conditions. The tests to be made on the sheets are not specified but any official tests adopted as standard for paper can be applied

2. Sampling

The pulp may be available for test in the form of samples or shipments. If a sample presented for testing is not submitted in an air tight container or provision is not made to preserve a certain moisture content in the pulp, the sample shall be seasoned to standard weight at 65 per cent humidity and 70 degrees F. temperature.

Shipments shall be sampled according to the official method, adopted by the Joint Committee of the American Paper and Pulp

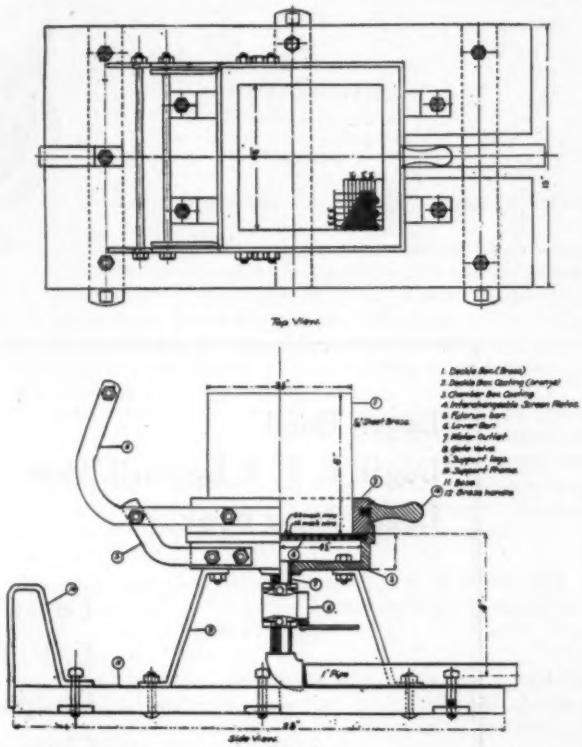

FIG. 2

Association, the American Association of Woodpulp Importers and the Technical Association of the Pulp and Paper Industry for sampling pulp for determination of moisture content. There should be strict adherence to these rules and the same care of the samples before they are ready for disintegration must be observed as in the case of samples for moisture determination. (Appendix A.)

A duplicate set of samples taken for moisture when placed in an air tight can to preserve the moisture content, serves well for the strength test.

3. Apparatus

(a) DISINTEGRATOR. (Fig. 1.)

The construction of the disintegrating apparatus to be employed must embody the following essential features:

(1) *Drive.* Propeller shaft direct driven from one-quarter horse power motor, 1,800 r.p.m. Flexible coupling is recommended.

(2) *Propeller Blades.* Four blades, size 2⅞ x 1⅜ x 3/16 inches, made preferably of phosphor bronze, with arrangement and assembly as follows: The blades are fitted into slightly dove-tailed

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grooves one-quarter inch deep, cut diagonally across the four faces of a ⅜ inch square shank, length 2½ inches, made solid with the end of the propeller shaft. The blades are set in pairs diagonally opposed to each other, at 60 degrees from horizontal, and the ends are cut so as to be parallel, when in operation, with the base of container. The clearance between the bottom of the blades and container should be within ½ to 1 inch.

(3) *Container* made of either glass or metal, minimum capacity 3 liters but having a 6 inch square cross sectional area with corners rounded on ½ to 1 inch radius. The vertical sides of the container should be rounded at the top to form a smooth shoulder, or such design that "dead" spots are eliminated.

Remarks. A very efficient disintegrator has been developed by the Canadian Forest Products Laboratories in Montreal. Certain improvements might with profit be incorporated on the existing apparatus but they effect only ease of manipulation. Further details of this apparatus may be had on request.

(b) Screening Apparatus.

Any type of screening apparatus can be used provided it is equipped with a screen plate having 0.012 inch slots. A suitable screening apparatus is described in Appendix B.

(c) Sheet Machine (Fig. 2).

The apparatus proposed for making the test-sheets is a sheet machine made with a few minor alterations from the patterns of W. G. Wilen (Wayagamack Pulp and Paper Company) and described by him in the Pulp & Paper Magazine of Canada, January 20, 1921. It consists essentially of two brass castings (Fig. 2, 2 and 3), the adjoining faces of which are machined to a watertight fit. To the interior of the top casting is soldered a sheet-brass box, the interior dimensions of which are 8¼ x 8¼ x 8 inches with both top and bottom open, the whole forming the deckle box of the apparatus. The lower casting is fitted with a water outlet (7) to which is connected a quick opening gate-valve (8), and a discharge pipe. The interior of the casting is slotted to take the screen plate (4) which is made up of a one-quarter inch, accurately planed brass plate with ⅛ inch holes drilled and countersunk.

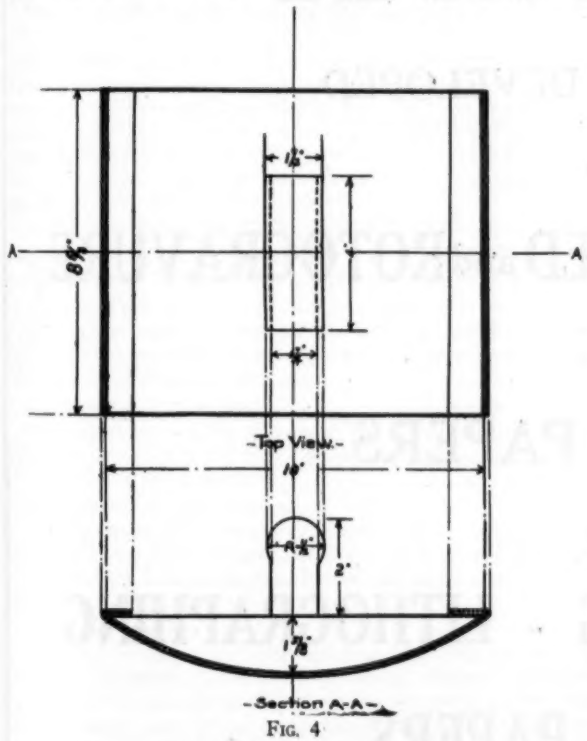

Fig. 4

This plate is covered, first by a 14-mesh wire screen and then by a 60-mesh screen soldered and sewn on so that it lies perfectly flat. The screen plate in this apparatus is easily removable for cleaning and repair, this being an advantage over the original design in which the screen plate was soldered directly to the casting. The deckle box is fitted with a lever bar (6) which is hinged to the fulcrum bar (5) of the chamber box casting, thus providing an easy means for removing the deckle box in order to couch the sheet off the wire. A stop (10) is used to hold the deckle box in the open position and a handle (2) is used to swing the deckle box open.

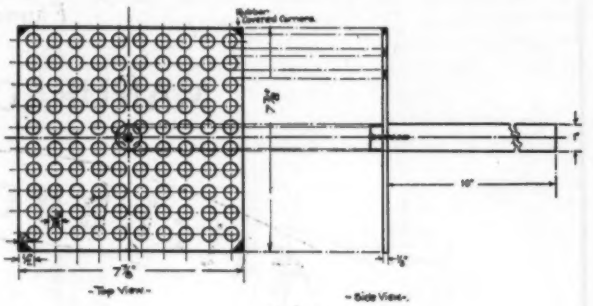

Fig. 3

To facilitate cleaning of the screen wire, a one-half inch water connection with valve is tapped in the base of the sheet machine. The desired head of water required in the chamber, preparatory to pouring in the stock, can be thus easily controlled.

A small hook fits into a recess located in the supporting frame and permits easy withdrawal of the screen plate when desired.

(d) Agitator (Fig. 3).

The agitator consists of a copper or brass plate 7⅞ x 7⅞ inches and ⅛ of an inch thick. Half-inch holes are bored over the total area of the plate a quarter of an inch apart. To the center of the plate is attached perpendicularly a wooden handle 10 inches long and one inch in diameter. To each corner of the plate are fastened small pieces of rubber to prevent any damage to the wire.

(e) Couch (Fig. 4).

The couch consists of wooden rocker 8⅛ x 10 inches with a segmental cross-section. The chord of the segment is 10 inches and the height of the arc about 1⅝ inches.

(f) Hydraulic Press.

Any type of hydraulic press can be used as long as its capacity is such that 200 pounds per square inch sheet area can be obtained on sheets 8 x 8 inches in size. A suitable press is described in Appendix C (Fig. 5).

(g) Humidity Control.

Any system of humidity control can be used providing it comply with the humidity and temperature conditions adopted as standard by the industry. These conditions are 65 per cent relative humidity and 70 degrees F. temperature. A tolerance of plus or minus two per cent in the relative humidity and plus 9 degrees F. in temperature is permissible.

Means shall be provided for so circulating the air in the humidity chamber that its humidity and temperature will be uniformly maintained in all parts. This is done by locating circulating fans at proper places in the chamber.

The relative humidity of the chamber shall be determined according to the specifications adopted as official (Appendix F).

The humidity control described by Dr. H. T. Ruff in Paper Trade Journal, August 25, 1927, is recommended as an inexpensive and reliable system. (Appendix E.)

4. Test Specimen

From all the samples of the pulp collected to be tested portions of the same size shall be extracted by a convenient method, so that a final sample of a weight equivalent to about 100 grams air

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dry pulp is obtained. The exact weight of the specimen to be disintegrated does not have to be determined. Immediately after cutting, the final sample shall be disintegrated. If this is inconvenient the sample shall be replaced in an air tight can or be saturated with water to prevent drying.

5. Procedure

(a) Disintegration.

The test specimen shall be disintegrated in 3 liters of water for exactly 5 minutes. The disintegrated stock shall then be screened over a 0.012 inch cut screen plate to separate any unbroken fiber bundles. The screened stock is collected and thickened in a suitable container equipped with drainage bottom covered with a 60-mesh wire.

(b) Preparation of Disintegrated Pulp.

The screened pulp shall be diluted to about 0.5 per cent consistency in a suitable container. The exact consistency shall be determined in each case as follows:

A carefully measured volume of the diluted disintegrated stock equivalent to about five grams of oven-dry fiber will be poured on to a filter paper on a Buchner funnel, the tare weight of the filter paper having previously been determined. Suction will then be applied to the funnel, very gradually at first to prevent a burst in the filter paper, but increasing to a maximum once the pat of stock has formed on the filter.

The pat of pulp, together with the filter paper and any adhering pulp around the sides of the funnel, is carefully removed and pressed between mercerized cotton with a hot iron, the whole being placed over several sheets of blotting paper. The pressing will be continued until the pat is practically oven dry, care being taken to avoid scorching. Final drying will be accomplished in a drying oven for fifteen minutes at 100 degrees C. The oven dry pat will then be removed from the oven, placed in an accurately tared weighing bottle, cooled and weighed.

The consistency will be calculated from the difference in the weights of the pulp before and after drying, the weight of the previously tared filter paper being deducted from the dry weight of the pat.

If complete separation between the pulp pat and filter paper can be made after removal from the Buchner funnel, there is no objection to weighing the pulp only.

(c) Area of Test Sheets.

The area of the test sheets made on the specified sheet machine will after drying be 8 x 8 inches or slightly larger, depending on the freeness of the pulp tested.

(d) Weight of Test Sheets.

The test sheets shall have a weight equivalent to 125 pounds per ream 500 sheets 25 x 40 inches at 65 per cent relative humidity and 70 degrees F. temperature and must not vary in weight more than plus or minus 3 pounds on that basis.

(e) Sheet Making.

Cover the screen of the sheet machine with clear water to a depth of four inches. Pour in the volume of diluted stock corresponding to the quantity of fibers required to make a sheet of the specified weight and fill the deckle box with clear water to such a height that it will require 12 to 14 seconds from the time the discharge valve is opened until the free water has left the sheet completely. The temperature of the water should be kept as closely as possible to 70 degrees F.

The sheet shall be made as follows: Mix the suspension of fibers thoroughly by moving slowly the specified agitator four times up and down into the suspension. No time must be allowed for settling, the gate valve shall be opened immediately on withdrawing the agitator from the fiber suspension. When the water has drained from the sheet completely lift up the deckle box and cover the sheet with a piece of damp felt. Couch the sheet using the wooden rocker and place the sheet evenly on top of the felt covering the previously made sheet. Galvanized iron plates shall next be placed on top and bottom of the stack of test sheets and felts.

If bursting and tearing strength are the only properties desired four test sheets are sufficient. If additional tests are wanted a sufficient number of test sheets shall be made so that a sufficient number of determinations can be made to insure an accurate average of each strength property desired.

(f) Pressing.

The sheets shall then be pressed between the felts for about 30 seconds at approximately 40 pounds per square inch sheet area to remove excess water and make the sheets easily handled.

The sheets shall then be pressed between dry cool blotters to a dryness of about 80 per cent air dry as follows:

First Pressing: Eight blotters shall be used on each side of every test sheet. The pressure shall be raised to 200 pounds per

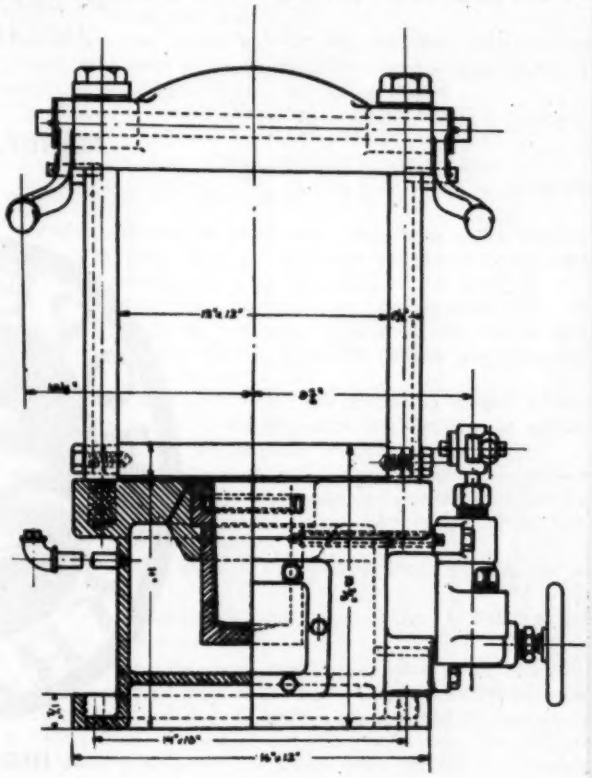

Fig. 5

square inch sheet area, and allowed to remain for 5 minutes exactly.

Second Pressing: The test sheets shall then be replaced on fresh blotters four on each side of every test sheet. The pressure shall again be raised to 200 pounds per square inch sheet area and allowed to remain for 2 minutes.

Use blotters which preferably have been cut 8½x8½ inches to facilitate the even stacking of the test sheets and blotters. This is important in order to get an even and similar pressure on each test sheet. Grade and basis weight of blotters are of no large consequence.

(g) Drying.

The pressed sheets shall then be dried in an atmosphere of 65 per cent relative humidity and 70 degrees F. temperature. The sheets shall be suspended in vertical position so that no tension is applied to the sheets during drying. A period of about 10 hours or "over night" should be allowed for proper equilibrium.

(h) Weighing of Test Sheets.

The dried sheets shall then be trimmed to a size 8x8 inches and weighed on a scale having sensitiveness of 10 mg. per 50 grams

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load. The weight shall be expressed in grams and hundreds of grams and then recalculated in pounds per standard ream as follows:

$$\frac{\text{Total weight of sheets in grams} \times 17.22}{\text{Number of Test Sheets}} = \text{Pounds per ream } (25 \times 40 : 500)$$

(i) TESTING OF SHEETS.

The test sheets shall then be tested for the various strength properties desired by means of instruments recognized as standards and according to the official methods adopted for testing paper. (Appendix D.) At least two properties have to be determined.

6. Report

Results shall be reported in points per 100 pounds basis weight which are obtained by multiplying the results obtained according to the official methods, by 100, and dividing the product with the basis weight of the test sheets.

Bursting strength, tearing strength, folding strength and tensile strength shall be reported in this manner. Per cent stretch shall be reported as in the official method for determining stretch of paper.

APPENDIX

A—Official Rules for Sampling Wood Pulp

1. FORMS OF WOOD PULP.

The forms in which wood pulp is available for test include the following:

Baled Pulp—Dried sheets; Hydraulic pressed laps
Roll Pulp—
Loose Lap Pulp—Wet laps; Hydraulic pressed laps
Double Press Wet Machine Pulp in sheets.

2. SPECIAL CONSIDERATIONS.

The official sampling[1] of pulp is also governed to some extent by the place, time and quantity of pulp to be tested.

Place—At Mill during manufacture.

In transit, for example: At dock during transfer from car to ship for export, or vice versa; At receiving point; Incoming car lots; Incoming shiploads.

Time—Freshly made pulp; Stored pulp.

Quantity Lots—Warehouse pulp; Open piles.

3. SAMPLING METHODS.

Wood pulp is offered for test under such a variety of conditions and in so many different forms that no one method of sampling and testing can be made applicable to all forms.

A. *Strip Method.* The Strip Method of sampling, while well adapted to mill sampling, is not suitable for the sampling of frozen lap pulp at receiving point.

B. *Boring Method.* The Boring Method, while well adapted to the sampling of baled pulp, is not suited to the sampling of wet lap pulp, under 40 per cent air dry.

C. *Wedge Method.* Neither is the Wedge Method, nor any other method which involves the breaking open of the bales, suitable for referee sampling of pulp at dock, since transportation companies decline to handle broken bales or bales which have not been rebaled as perfectly as they were at point of shipment, which is impossible with ordinary handpresses.

D. *Accuracy.* Accuracy in sampling depends more upon taking sufficient and representative samples from individual units, whether bales or laps, to insure a fair average of the lot, than upon any particular method of cutting the samples.

4. DETERMINATION OF WET WEIGHT OF PULP.

As all pulp is invoiced on the basis of air-dry tons, rules for the determination of the wet weight of the pulp are just as important as rules for sampling and testing, and the wet weight should always be determined by any one of the following methods:

A. *Railroad Weight.* Railroad weight of entire car lot where tare of empty car is actually determined by weighing it. (This does not mean the routine bill of lading railroad weight, but an actual weighing upon railroad scales supervised by party or parties at interest.)

B. *Certified Weight.* Weight of entire car lot as certified by official recognized weighing bureau issuing weighmaster's certificate of weight.

C. *Weighing by truck and tested scales.* Wet weight of lot by sum of weights of truck loads passing over accurately tested scales during loading or unloading.

D. *By calculation from average weight of parcels.* *Wet weight of lot may also be determined by multiplying the actual number of bales or rolls in the shipment, as determined by accurate count, by the average weight of the bales or rolls weighed and sampled. Note: See Section 6, Division "a," paragraphs 1 and 2; also Section 6, Division "c," paragraph 1. In domestic roll or wet bale pulp the variation (in weight between individual rolls or bales) is often so great that it may be necessary to weigh the entire shipment.

Where bales are numbered, the numbers upon the bales selected should be indicated in report.

A normal bale should be intact and unbroken. Reject as abnormal those bales whose weight differs from average gross mill weight by more than 10 per cent plus or minus.

5. SAMPLING AT THE PULP MILL.

A. *Strip Method*

1. Wet Machines. Pulp coming from wet machine.
2. Drying Machines. Pulp coming from driers in continuous web.

Details: Cut two or three inch strip across entire width of web coming from machine. All strips cut should be the same width and uniform across the machine.

Rate of sampling wet machine pulp; one sample as above described every 2,000 lbs. wet weight production. Rate of sampling web dried pulp, one sample across the machine for every fifth bale or roll of production.

It is to be noted that where this method is applied to dried pulp, the wet weight of shipping units shall be taken at substantially the same time as sampling for moisture test.

In case pulp is stored at mill before shipment, the shipping units lap, rolls or bales, shall be subject to methods of sampling covering pulp in these various forms. Wet weight of lot to be determined at time of sampling.

6. SAMPLING ON DOCK OR AT RECEIVING POINT (Where first test is made).

A. *Boring Method.* Suitable for sampling. 1. Baled pulp in sheets. 2. Rolled pulp.

1. *Baled Dry Pulp* (a) Number of bales to be sampled.—Not less than 5 per cent of the entire shipment, except by agreement, but not less than 15 bales shall be sampled. Samples to be drawn from only sound and intact bales from different sections of entire shipment and analyst shall be careful to observe that no unusual conditions prevail in section of bales.

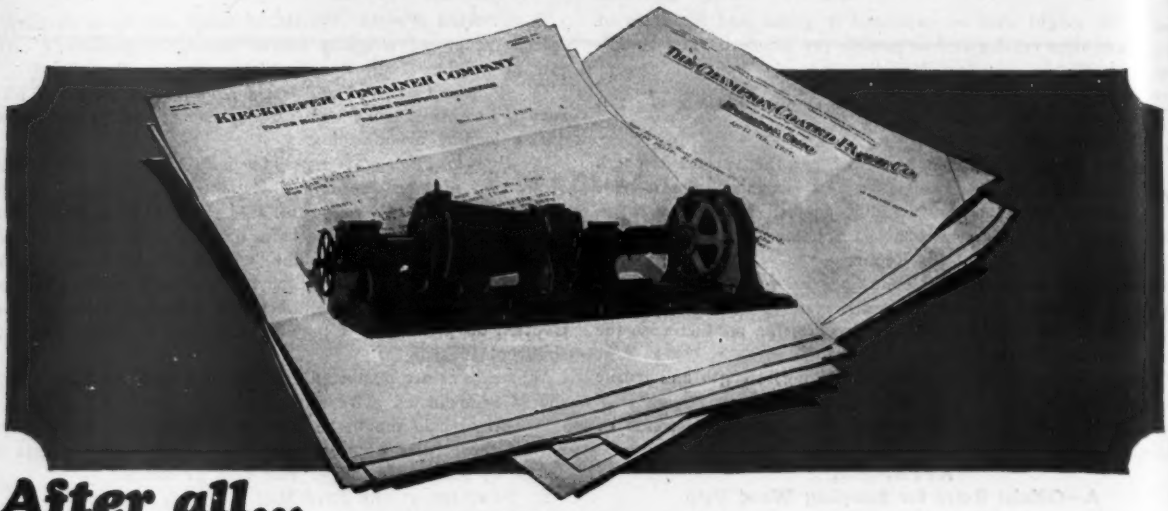
B. *Details.* The samples shall be taken by boring into a bale to a depth of 3 inches with a special tool which cuts a disk about 4 inches in diameter. The disks shall be removed and 10 of them taken as a sample, these to be selected as follows:

One disk at 2nd sheet from wrapper
Two disks at depth of 1 inch
Three disks at depth of 2 inches
Four disks at depth of 3 inches.

The holes to be bored shall be so located that in 5 successive bales they will represent a portion extending diagonally across the bale. Each bale is to be bored but once. The first bale to be bored at the corner, the edge of the cut being at a distance of 1 inch from the edge of the bale. The second cut shall then be made half-way between the location of the first cut and the center of the bale; the third bale shall be cut at the center; the fourth bale half-way between the center and the corner; and the

[1] The word "testing" in the official method has been supplanted with "sampling."

* Note: When this method is used for determining the total weight, all the bales weighed, and none others, are to be sampled.
Note: Each car should be uncoupled from the train and weighed separately.



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fifth bale in the opposite corner in a position corresponding to the first.

2. *Roll Pulp*

(a) Number of rolls to be sampled: At least 10% of lot, where possible to determine; same proportion of outside rolls to center rolls should be maintained as coming from machine.

(b) Details: Edge of first hole 2 inches from the end, holes in succeeding rolls shall be spaced successively one-fifth of the distance across the roll as in bale sampling, traveling toward opposite end of roll. Selection of disks either in accordance with bale boring given above or second disk and four others taken at least 1½ inches from outside of roll as in case of strip method for roll pulp following.

B. *Strip Method.* Suitable for sampling. (1) Pulp coming from double press wet machine, but not hydraulically pressed. (2) For unpressed lap pulp. (3) Roll pulp.

Details: The entire shipment of loose pulp, whether in laps or sheets, must be weighed at the time of sampling.

(1) Double press machine, pulp, not pressed. A strip 2 to 3 inches wide through center of sheet, alternating with and across machine run. Sampling to be continuous through lot and rate of sampling should provide at least one strip for each 2000 lbs. of wet pulp. All strips cut should be the same width.

(2) Lap Pulp Unpressed. A 2 inch strip through center of lap alternating long way and short way of lap. Depth half way through. Sampling to be continuous through car lot and rate of sampling should provide at least one strip for each 2000 lbs. of wet pulp.

(3) Roll Pulp. For roll pulp, take test strip 2 or 3 inches in width across the face of the roll from second layer and 4 other similar strips from layers located at least 1½ inches or further from the outside layer. All strips cut should be the same width.

While the strip method is quite commonly used for sampling hydraulic pressed lap pulp, this method is known and has been shown to give high results both by calculation of ratio of wet edge to dry center of sample compared with ratio of wet edge to dry center of total lap, and by repeating actual tests comparing sample so taken with moisture tests on whole lap.

C. *Wedge Method.* Suitable for sampling. (1) Lap Pulp. (2) Hydraulic pressed laps.

This method is admittedly accurate when followed in exact details. The principal objections to its adoption as the only standard are the practical difficulties in getting non-technical samples to space the cuts accurately in forty divisions around successive laps. Further, a saw is not always available. As an alternate method, the committee recommends the modified wedge method, which has been proved by experience to give results well within practical limits of accuracy.

1. *Details:* Angle of wedge must be exactly 9 degrees. A wedge sample to be cut from every 2000 lbs. wet weight when piled loose in car. The wedge to be approximately 2½ inches at widest point, and extending to center of lap. Depth of cut: Half through lap. Position of cuts: These to start at middle of closed edge of lap as first position. Successive laps to be cut going around clock-wise.

2. *Selection of laps from Hydraulic Pressed bales:*

From 20 per cent of the bales sampled, withdraw the middle lap.

From 40 per cent of the bales sampled, withdraw the lap halfway between the outside and the center.

From 35 per cent of the bales sampled, withdraw the lap next to the outside.

From 5 per cent of the bales sampled, withdraw the outside lap.

These laps which are withdrawn from the outside of the bales are to be sampled on that side which formed the surface of the bale. It is convenient to weigh and sample a total number of bales which is a multiple of 20 and the total number of the sample should be at least 2½ per cent on large lots and 5 per cent on small lots.

7. SAMPLES.

A. *Sampling.* Samples must be drawn only from sound and intact bales, and from different sections of the entire shipment; the analyst shall be careful to observe that no unusual conditions prevail in the section of the bales.

The sampling must be done by or supervised by the approved chemist personally, or by his competent "bona fide assistant."

In the opinion of the Committee, the words, "bona fide assistant" as used above, are interpreted as indicating an individual actually and continuously in the paid employ of a recognized chemist. The chemist is held responsible for the acts of his bona fide assistants. The Committee differentiates between a bona fide assistant, as interpreted above, and an agent, as such, not continuously in the paid employ of the approved chemist.

B. *Care of Samples.* The samples, as taken, to be immediately deposited in a metal can with tight-fitting cover and the net wet weight obtained as soon as practicable after taking samples. In case of unavoidable delay between time of taking samples and weighing, a special precaution should be taken to seal edges of cover air-tight with friction tape or otherwise.

B—Description of a Suitable Screening Apparatus

The following is a description of a small screening apparatus which has been found to be very satisfactory.

The screen consists of a box, the inside dimensions of which are 21½"x11¼" or an area of just one half of an ordinary commercial screen plate. This box is fitted with a one inch support 2.5 inches from the floor of the box, to which the screen plate is secured by screws. A moulding is nailed around its upper edges to the side walls of the box to ensure rigidity. The floor of the box is cut out 3" from the inner walls, the piece thus cut out being trimmed down so that there will be a clearance between it and the remaining portions of the floor of ⅛". This section of the floor is secured to the stationary portion by means of a heavy rubber diaphragm, care being taken to make all joints absolutely tight. To the movable portions of the floor two connecting rods are attached by suitable bearings these latter rods being situated 2" from each end. The use of two connecting rods is carried out in order to avoid any rocking motion being given to the diaphragm thus ensuring all motion straight up and down.

The connection rods are attached to a one-inch cam shaft so constructed as to give a total throw of ⅛" to the diaphragm. The cam shaft is held in three large bearings and carries a 3½" flat pulley at its outer end. This cam shaft is designed to be driven at 800 r.p.m. thus giving 800 throws per minute to the diaphragm this being the equivalent to that on an ordinary commercial flat screen. An orifice is cut in the screen box level with the floor and is fitted with a suitable discharge spout to carry the screened stock to the thickener, consisting of a deep screen tray fitted with a 60 mesh wire held in a box of similar dimensions to the screen.

C—Hydraulic Presses

A very suitable and widely used hydraulic press is made by the Watson-Stillman Company, New York City. (Fig. 5).

This press consists of a machine steel cylinder machined all over which is set into a cast iron cistern. This cistern is also the lower support for the four tension rods. The ram which has a diameter of 3½" and the lower moving platen are all cast iron as is also the top platens. The size of the platens is 12x12 inches. The pump for building up hydraulic pressure is mounted directly on the side of the cistern. Its suction line removes water from the cistern and the pressure side of the pump is piped directly to the cylinder. The pump is a hand pump made of hydraulic metal. The pump also has incorporated in it a release feature whereby hydraulic pressure on the ram is released. This is done by means of a hand wheel valve stem on side of pump. The gauge pipe leads directly from the pressure side of the pump. The capacity of the press is 30 tons on the ram. Another feature

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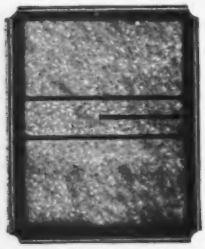
THAT'S a long time ago. Few men alive remember those days. Yet, even then Shuler and Benninghofen were making Hamilton Felts.

Seventy years of experience are woven into every paper making felt that leaves our mills. It is the one asset, more than all the others, that makes a Hamilton a better felt.



Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

This experience which dictates the choice of the wools and the proper mixing of them, the method of combing and carding, of weaving and of fulling, assures felts with all the qualities you want—long life, economical cost, large water removing qualities, and good production of good paper.

The result is that with a Hamilton Felt on your machines you make paper at a lower cost. You remove more water and save in steam and coal. You get longer life and put up with less down time for washing. You produce a better and more uniform sheet with less broke. In other words, a Hamilton Felt makes money for you.

Try a single Hamilton Felt. Put it to any test you think a felt ought to undergo. Compare it with the results you have been getting. Then you will use Hamilton Felts on all your machines.

The Hamilton Felt man who calls on you can give you a Hamilton Felt which will fit your machines, stocks, and mill conditions perfectly. Ask him, or write to us direct.

Shuler & Benninghofen, Hamilton, Ohio

The Miami Woolen Mills

Established 1858

Hamilton Felts

of this press is that the space between the lower and upper platens can quickly be closed by means of a lever shown on the side. This is done by hand. After the space is closed the release valve is closed and the pressure is obtained by means of the hand pump.

Some other makes of presses used to some extent for strength testing work are the following:

Valley Iron Works Company, Appleton, Wis.
Hydraulic Machinery Company, Montreal, Que.
Appleton Machine Company, Appleton, Wis.
Williams Apparatus Company, Watertown, N. Y.
Beloit Iron Works, Beloit, Wis.

D—Official Paper Testing Methods

1. Official Method of Determining the Bursting Strength of Paper.

Apparatus:

The testing instrument shall consist of (1) a circular aperture 31 mm. (1.24 in.) in diameter in a plane surface, the aperture registering exactly with a similar aperture in a second plane surface. One aperture shall communicate with a hydraulic chamber and the other shall be movable along the axis passing through the centers of the two apertures. (2) Means of firmly clamping the two plane surfaces together. The clamping pressure and the extent of the contacting plane surfaces shall be such that there shall occur no slipping or creeping during the test of a specimen clamped between the plane surfaces and no injury to the specimen so clamped. (3) A rubbed diaphragm firmly secured to the inner side of the aperture in the hydraulic chamber so as to close it off and expand through it when hydraulic pressure is applied. (4) Means of applying hydraulic pressure through a noncompressible fluid to the rubber diaphragm. (5) Means of accurately and continuously registering the pressure maintained in the hydraulic chamber, the gourdon pressure gage being preferred.

Specimens:

Specimens for test shall be so selected from a sample secured by the official sampling method as to be representative of the sample.

Method:

The specimen shall be firmly clamped in position and pressure applied within the hydraulic chamber at a uniform rate such that the noncompressible fluid shall be displaced against the rubber diaphragm and through the aperture at a rate of 75 cubic centimeters per minute[2] until the paper bursts. The gage used must be such that the bursting strength of the paper tested will not be greater than ¾ of its capacity, nor less than ¼ of its capacity. The gage reading shall be recorded to the nearest 1 per cent of the total reading. At least 10 bursts shall be made, each on a different specimen of the sample and an equal number from each side of the specimen. Bursting strength tests shall be made on specimens conditioned according to the official method for conditioning, and in the atmospheric conditions therein specified.

Calibrations:

The instrument shall be calibrated at intervals of not more than thirty days. The calibrations shall be performed as follows: The gage shall be removed and calibrated in a horizontal position with a deadweight gage tester. A record shall be kept of any deviations from the indicated readings and corresponding corrections made in test results secured with the gage. The gage shall be replaced and the pressure chamber refilled with sufficient glycerine to leave the rubber diaphragm, when placed in position, slightly depressed, taking care to eliminate all air bubbles. The rubber diaphragm shall be renewed at least every thirty days.

Reports:

The report shall include the average, the minimum and maximum test results. The readings of the gages shall be reported to the nearest 1 per cent of the total reading and shall be expressed as "points."

[2] This rate is equivalent to turning the hand wheel of the ordinary type of bursting strength paper tester at a rate of 120 r.p.m.

(2) Official Method for Determining the Tearing Strength of Paper.

Apparatus:

The testing apparatus shall consist of a stationary jaw, a movable jaw carried on a pendulum, a slitting device and a device for registering the tearing force. The pendulum shall preferably be in the shape of a sector and carry on it a scale, the graduations of which shall indicate the tearing force, preferably directly in grams, from 0 to 100, laid off on the sector within approximately 50 degrees of arc. A stop shall be provided for holding the sector in its initial displaced position and for releasing it quickly. With the pendulum in its initial position ready for a test, the two jaws shall be separated by an interval of about 3 mm. (0.12 in.) and shall be in line so that the specimen clamped in them lies in a plane perpendicular to the plane of oscillation of the pendulum, and the tops of the jaws are in a horizontal line. The movable jaw shall be so placed on the sector that a line in the plane of the sector from the point of suspension of the pendulum to a point where the top of the jaw is in contact with the specimen shall be about 10 cm. (4 in.) long and shall make an angle of about 30 degrees with the plane of the specimen. The slitting device shall be so arranged as to cut an initial slit in the specimen half-way between the two jaws and extending from the lower edge of the specimen to a distance of about 4 mm. (0.16 in.) above the top of the jaws.

Specimens:

Specimens for test shall be cut accurately in each principal direction of the paper not less than 6.3 cm. (2.5 in.) in length (the horizontal position when placed in the jaws) and of such width that the paper shall extend exactly 4.3 cm. (1.69 in.) above the apex of the initial slit. The edges of the specimens must be clean cut and opposite edges parallel. The specimens shall be so selected from a sample secured by the official method as to be representative of it.

Method:

Enough sheets shall be torn at one time so that the readings on the scale shall be not less than 40 g. The test specimen shall be so placed in the jaws that it rests evenly on their bottom plates and so that the paper extends a distance of not less than 2.5 cm. (1 in.) into the movable jaw. Readings obtained when the tear deviates more than 6.3 mm. (0.25 in.) from the line of the initial slit shall be rejected. The sector stop must be released sharply in operating the instrument. The knife for making the initial slit shall be maintained sharp. Not less than 5 tearing tests shall be made in each principal direction of the paper and the result shall be computed in grams per single sheet of paper by multiplying the readings of the instrument by 16 and dividing by the number of sheets tested at one time. Tearing strength tests shall be made on paper conditioned by the official method and in the atmospheric conditions therein specified.

Calibration:

With the sector raised to its initial position and resting against its stop the jaws shall be accurately alined, readjusting the stop if necessary. The ball bearings shall be adjusted so as not to bind and shall be well oiled. The instrument shall be levelled so that the edge of the stop against which the sector rests in its initial position lies vertically below the point of suspension of the sector. A white line is usually placed on the sector for convenience in making this adjustment. With the sector freely suspended and at rest this mark should be in line with the edge of the stop. Verify the position of the mark with a plumb line cutting the axis of suspension of the sector. After being levelled, the instrument shall be operated several times with nothing in the jaws (movable jaw closed) to find if it registers zero with no tearing load. If necessary the pointer stop shall be adjusted until the zero reading is correctly registered. Place the pointer exactly on zero. Without again touching the pointer operate the instrument three times, being very careful each time not to jar the pointer in setting the sector against its stop. The pointer will

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be pushed beyond zero for a distance which measures the maximum pointer friction. This should be equivalent to not more than 3 g. (compare with distance from zero to 3 on scale). If necessary to reduce this friction, clean pointer sleeve and groove (washing with gasoline if necessary) and apply fresh oil.

Note: The friction error allowed has been compensated for at its maximum value by the shifting of the pointer stop in adjusting the zero reading.

Report:

The results shall be reported in grams to the nearest 1 g. The average, maximum and minimum tearing strength for both of the principal directions of the paper shall be reported. The report shall include the number of sheets torn at one time.

Additional Information:

Tearing Strength Test for Paper, A. Elmendorf, Paper, Vol. 26, page 302, April 21, 1920. Supplementary Study of Commercial Instruments for Determining Tearing Strength of Paper, PAPER TRADE JOURNAL, Vol. 74, No. 10, Page 43, March 9, 1922.

(3) OFFICIAL METHOD FOR DETERMINING THE FOLDING ENDURANCE OF PAPER

Apparatus:

The testing instrument shall consist of:

(1) Two horizontally opposed jaws which are constrained to move in the same straight line without rotation. The jaws shall be suitably supported as by frictionless rollers (see note). The jaws shall be adapted to maintain the ends of the specimen in the same vertical plane. There shall be provided a means for holding the jaws in a fixed position while inserting the specimen and a means for subsequently subjecting the specimen to approximately 0.8 kg. alternately as the specimen is folded and unfolded.

Note: Cylindrical rollers are preferable to the knife-edge rollers some times used for the purpose as the edges of the latter frequently become flattened, causing increased friction and consequent error in the results.

(2) A vertically slotted, horizontally reciprocating blade mounted between the jaws and moving transversely to the line of motion of the jaws in such manner that the edges of the slot shall push the specimen alternately to either side of its neutral position in the line of motion of the jaws by a distance of 10.16 mm. (0.400 inch). The slotted blade shall have a thickness of 0.50 mm. (0.020 inch) and the edges of the vertical slot shall be rounded to a cylindrical surface. The vertical extension of the slot shall be such as to extend beyond the upper and lower edges of the specimen.

(3) Four rollers rotating on vertical axes mounted in a quadrangle about the central position of the vertical slot in the reciprocating blade so as to cause the specimen to fold around the edges of the vertical slot and lie against the blade as it moves back and forth. These rollers shall be so mounted that the reciprocating blade bisects the clearance between rollers in one direction and the specimen in its neutral position bisects the clearance between rollers in the transverse direction. The minimum clearance between the blade and the rollers on either side shall be 0.38 mm. (0.015 inch) and the minimum clearance between rollers in the space occupied by the specimen shall be approximately 0.50 mm. (0.020 inch). The design throughout shall be such as to entail a minimum of friction in the moving parts.

(4) A means of importing harmonic motion of constant period to the reciprocating blade. A power driven apparatus is preferable.

(5) A device for registering the number of double folds required to sever the specimen.

Specimens:

Specimens to be tested shall be cut accurately in each principal direction of the paper with a width of 15 mm. (0.59 inch) and a length such as to insure a firm grip in the jaws without buckling. They shall initially be free from folds or wrinkles or blemishes not inherent in the paper. The edges of the specimens must be clean-cut and parallel to the opposite edges. The specimens shall be so selected from the sample secured by the official sampling method as to be representative of the sample.

Method:

With the vertical slot of the reciprocating blade in its central position the specimen shall be placed in the slot and the ends clamped firmly and squarely in the jaws with the surface of the specimen lying wholly within one plane. The specimen shall be handled by the ends and not touched with the hands in the region which is to be folded. The specified tension shall then be applied and the specimen folded at a uniform rate of approximately 120 double folds per minute until it is severed at the crease. The number of double folds required to sever the specimen shall be recorded. Not fewer than 10 strips cut in each principal direction of the paper shall be tested. Folding endurance tests shall be made on paper conditioned according to the official method for conditioning, and in the atmospheric conditions there in specified.

Calibration:

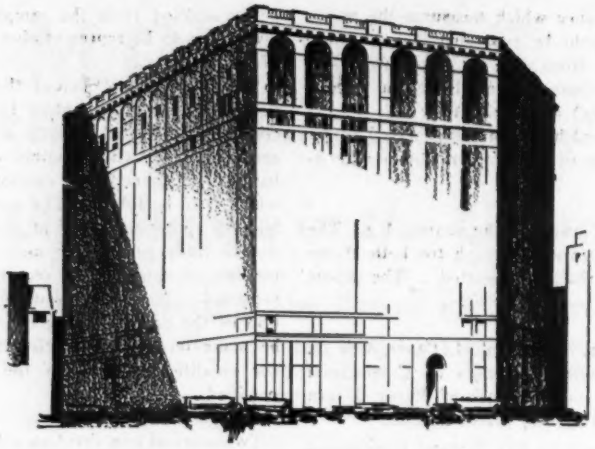
Two pairs of bow dividers, a 1 kg. weight, and a suitable medium, such as a balanced frictionless pulley or bell-crank lever, for applying deadweight load to a horizontally moving jaw are required for the calibration.

All working parts shall be in good condition, well oiled and in proper adjustment. Especial attention should be given to the condition of the supporting rollers, particularly if they are of the knife-edge type, replacement being necessary if the edges are worn flat at any point.

The calibration shall be made essentially as follows:

On each jaw make two very small punch-marks in a line parallel to the direction of motion of the jaw, one punch-mark being made on the shoulder of the jaw and the other on the adjacent shoulder of the fixed jaw-stem guide. Clamp in the jaws, according to procedure under *Method,* a strip of celluloid 0.005 inches thick. Revolve the driving wheel until the slot in the folding blade is farthest from its central position and then apply the tension to the jaws by pulling out the two spring housings simultaneously. Adjust one of the jaw dividers to accurately span the interval between the punch-marks on one jaw and adjust the other pair of dividers similarly to span the interval between punch-marks on the other jaw. Take care that these divider settings remain unchanged during the calibration. Release the spring tension, revolve the driving wheel a half revolution, again apply the spring tension and see if the intervals are the same as before. If not the crank pin is probably worn and must be put in repair so that each interval is the same for the two antipodal positions. Apply a deadweight load of 1 kg. (see note) to one of the jaws, tap apparatus lightly and allow the stressed jaw to come to a stable position. Adjust the tension of the spring until the interval between the two punch-marks is exactly the same as for the original setting of the dividers for that jaw. In a similar manner adjust the spring tension of the other jaw so that a deadweight load of 1 kg. produces the interval between punch-marks for which the other dividers were set. This procedure insures that the maximum tension on the specimen being folded is exactly 1 kg. Put a specimen in place in the tester and apply the tension as for a folding test. Turn the driving wheel until the folding blade is farthest from its central position as at first and see if the two intervals are the same as for the setting of the respective dividers. If so the tester is ready for use. If one interval is greater and the other less than the setting of the respective dividers it is impossible to calibrate the instrument until the jaw springs have been replaced by matched springs. The folding tester shall be calibrated at intervals of not more than 30 days.

Note: The deadweight load may be applied in the horizontal normal operating position by means of a balanced bell-crank lever having knife edge suspension or by means of a frictionless pulley over which is passed a strong thread or fine wire, one end of which is fastened in the jaw and the other attached to a kilogram weight. In the latter case it is necessary to take one of the jaws



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with its support out of the way while calibrating the other, and to take care that the wire or thread does not touch any part of the apparatus other than those specified. Or if desired the jaw to be calibrated may be removed together with housing and support, taken apart so as to obtain the weight of the jaw, reassembled and clamped in vertical position, and stressed by a deadweight which together with the weight of the jaw is equal to 1 kg.

Report:

The results shall be reported in double folds. The average, the maximum and the minimum folding endurance for both of the principal directions of the paper shall be reported.

Additional Information:

References: Folding Endurance of Paper, F. P. Veitch, C. F. Sammet and F. O. Reed, Paper, Volume XX, No. 12, May 30, 1917. Resistance to Folding, W. Horzberg, Chemical Abstracts, Volume XIV, page 2262, July 20, 1920. Paper Testing Methods, TAPPI, 1922.

(4) Determining the Tensile Breaking Strength of Paper.

Apparatus:

The instrument shall consist of, (1) two clamps whose centers shall be in the same plane parallel with the direction of motion of the stressing clamp and so alined that they will hold the test specimens wholly in one plane, (2) a pendulum so attached to one clamp as to accurately balance the load applied to the test specimen, (3) a device attached to the pendulum to indicate on a graduated scale the breaking load of the test specimen, (4) a scale graduated in metric weight units which may be read to an accuracy of not less than 0.2 per cent of the total reading and (5) a means of moving the stressing clamp at a uniform rate. The machine shall preferably be power driven.

Specimens:

Specimens for test shall be cut accurately in each machine direction of the paper, not less than 12.7 mm. (0.5 inch) nor more than 25.4 mm. (1 inch) wide, and not less than 140 mm. (5.5 inches) in length. The edges of the specimens must be clean cut and parallel to the opposite edges. The specimens must be accurately cut to the predetermined width. They shall be so selected from the sample secured by the official sampling method as to be representative of the sample.

Method:

The ratio of the clearance distance between jaws to the width of the specimen shall be not less than 5:1, nor more than 10:1. The test specimen shall be firmly clamped at right angles to the jaws of the clamps and the stressing jaw then operated at a speed of 30.5 cm. (12 inches) per minute until the specimen breaks. The breaking load shall be recorded to the nearest 1/10 of the total reading. The tester shall be of such capacity that the tensile strength of the paper tested will be not greater than 90 per cent, nor less than 10 per cent of the capacity of the tester. Not less than 10 strips cut in each machine direction of paper breaks at or in the jaws shall be rejected. Tensile strength tests shall be made on paper conditioned according to the official method for conditioning, and in the atmospheric conditions therein specified.

Calibration:

The tensile strength tester shall be calibrated by suspending weights from the clamp attached to the pendulum and noting the corresponding readings on the scale. The load shall be applied at the rate specified in the test method and other conditions must simulate the paper testing conditions as closely as possible. A record shall be made of deviations from the scale readings and corresponding corrections shall be made in test results. Calibration shall be made at intervals of not more than thirty days.

Report:

The results shall be reported in kilograms to the nearest 1/10 of the total reading. The average, maximum and minimum tensile strength for both of the machine directions of the paper shall be reported. The report shall include the width of the specimen in centimeters.

E. Constant Humidity Testing Room*

In order to eliminate the effect of varying relative humidity on physical tests for pulp and paper, a small constant humidity-constant temperature room has been developed in the laboratories of the Mead Pulp and Paper Company, at Chillicothe, Ohio. This room was designed to give satisfactory regulation at a cost that would not be considered prohibitive. Our room has been in use

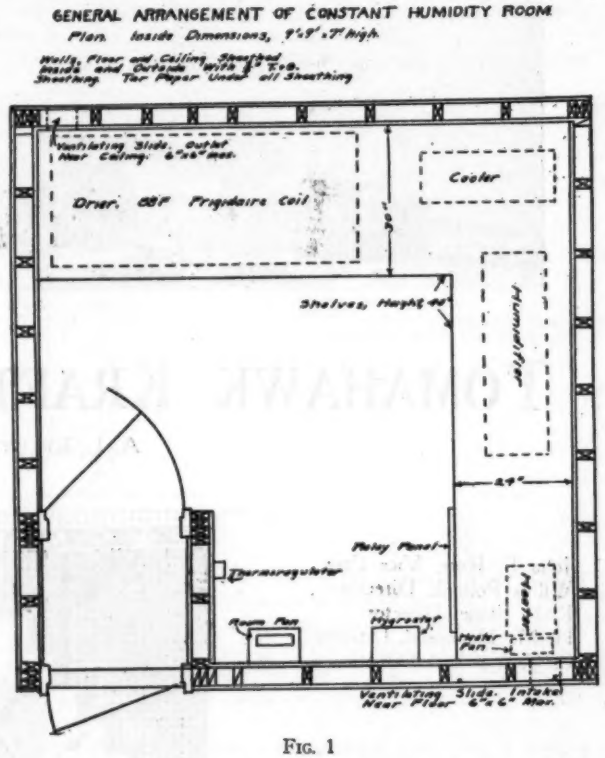

GENERAL ARRANGEMENT OF CONSTANT HUMIDITY ROOM
Plan. Inside Dimensions, 9'-9" x 7' high.
Walls, Floor and Ceiling Sheathed Inside and Outside with ¾" T. & G. Sheathing. Tar Paper Under all Sheathing
Ventilating Slide, Outlet Near Ceiling. 6"x6" Min.
Drier. CBF Frigidaire Coil
Cooler
Shelves, Height 4'-0"
Humidifier
2'-9"
Relay Panel
Thermoregulator
Room Fan
Hygrostat
Heater
Heater Fan
Ventilating Slide, Intake Near Floor 6"x 6" Min.

FIG. 1

for about two years, and in the last year several rooms modelled after this one have been constructed by other mills.

General Construction of Room

The inside dimensions of this room are 9 by 9 and 7 feet in height. This size permits two men to use it at the same time. However, we would recommend building the room at least equivalent to 10 by 10 or 12 by 12 feet if possible. Larger sizes would probably be beyond the capacity of the air conditioning apparatus used, unless the walls were unusually well insulated.

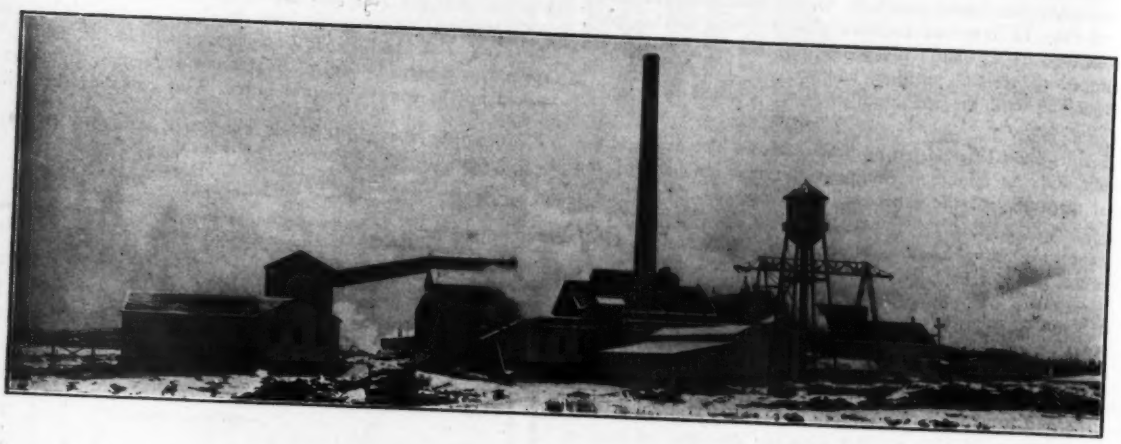
The walls, ceiling and floor are double construction. ¾ inch tongue and groove sheathing is applied to both sides of the 2 x 4 inch frame. Tar paper is used under all sheathing. At least one thickness of insulating board, such as masonite, celotex, insulite or corkboard is recommended.

Double windows and doors are used. The inside of the room should be well varnished or painted, to render it as nearly waterproof as possible, and hence prevent lag in humidity regulation. Indirect illumination from a skylight is preferable. Working benches are provided along two walls. The air conditioning apparatus is placed under these benches. Figure one shows the general construction and arrangement of the room.

Control System

Humidity and temperature are controlled independently. Humidifying, dehumidifying and cooling are controlled by fans which force room air over appropriate apparatus. The fans are operated through relays connected to the hygrostat or to the thermoregulator. Fig. 2 is the wiring diagram.

* Contribution from the Research Department, Mead Pulp and Paper Company, Chillicothe, Ohio.



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Hygrostat (Fig 3)

A very satisfactory and inexpensive hygrostat was constructed from an old balance. If it is necessary to purchase such a balance, one having a sensitivity of about one centigram is desirable, which need not cost more than about $6.

The regulator is operated by a silk thread about 36 inches long. The top fastening for the thread is adjustable permitting the regulator to be set at any desired humidity without disturbing the contact adjustments. Two wire-mercury contacts are provided, one for the drier and one for the humidifier, thus making it possible to obtain any desired lag between the operation of the drier and of the humidifier. The contact cups may be placed on one side of the center post as shown, or on opposite sides. Under average conditions the drier or the humidifier operates intermittently, but not alternately. This arrangement materially reduces the load on both drier and humidifier. The sensitivity of this hygrostat makes the arrangement entirely practical.

Either platinum or nichrome wire may be used for contact points. The mercury cups should have an inside diameter of at least 3/8 inch. This gives a flatter mercury surface, and a slight beam shift does not disturb the adjustment. The mercury surface should be cleaned about once a week. If metal cups are used they should be made of steel.

This regulator is sensitive to about ± 0.2 per cent relative humidity. Actual room operation to ± 1 per cent relative humidity is easily obtained.

The thread of the regulator should be placed so it is not in the direct path of a fan.

Thermoregulator

An ordinary mercury-toluene thermoregulator is used. This regulator is so placed that the room fan forces air over it. This regulator controls the heater current and the cooler fan. As the heater is about 600 watts, a power relay must be used. With this system the room temperature varies less than ± 0.2 degrees F.

Allen Abrams, Marathon Paper Mills, Rothschild, Wis., has used a Mercoid thermostat to control the heater and cooler. While it is not as sensitive as the mercury-toluene regulator, it should regulate to ± 1 degree F, which is entirely satisfactory for the purpose. This eliminates the power relay and the primary relay

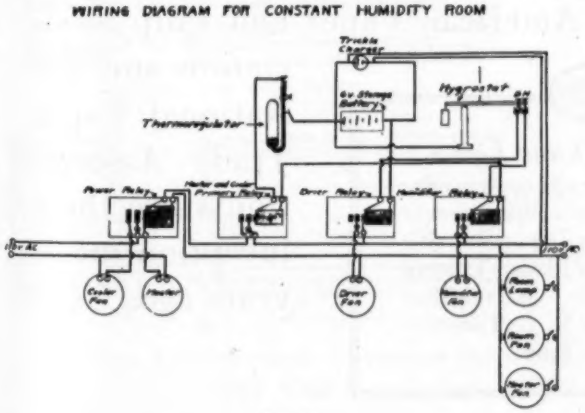


Fig. 2

controlling the power relay. The Mercoid thermostat, unless unusually accurate temperature control is required, is desirable. The two-circuit instrument is used, one circuit of which goes to the heater, and the other to the cooler fan. The costs of the two systems are approximately equal.

Heater

A heater of approximately 600 watts is adequate for 75 degrees F room temperature. This, however, will vary with location of the room and climatic conditions. We are using a lamp bank with three 200 watt lamps. The lamp bank makes a heater easily adjusted to weather conditions, but other types may be used.

The heater is set in front of the intake room ventilator. The heater fan runs continuously, and also serves to draw fresh air into the room.

Cooler

We operate our room at 75 degrees F. In summer a cooler is necessary to maintain this temperature.

The cooler consists of a 24 by 24 Aerofin heater, through which

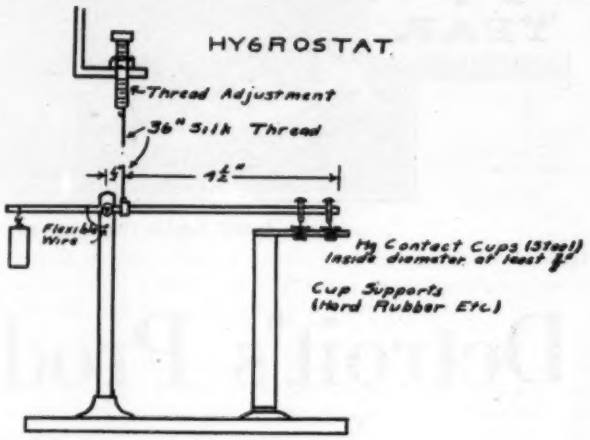


Fig. 3

cold water circulates. The summer temperature of the cooling water is 65 degrees F. This unit is housed in a galvanized iron casing with a large hole to admit room air from the cooler fan, and smaller holes for releasing the cooled air. A solenoid valve to shut off the cooling water may be connected in shunt to the cooler fan. In this case direct current must be used for this circuit.

In cooler climates when a refrigerating type drier is used, a cooler may be unnecessary, especially if the room is well insulated. In this case the drier fan would be so wired that it would be started either by the hygrostat or the thermoregulator. If the fan were operating for lowering the temperature when the humidity was at or under room value, the humidifier would have to compensate. If the fan were operating to lower the humidity with the temperature at or under the room value, the heater would have to compensate.

Drier (Figs. 4 and 5)

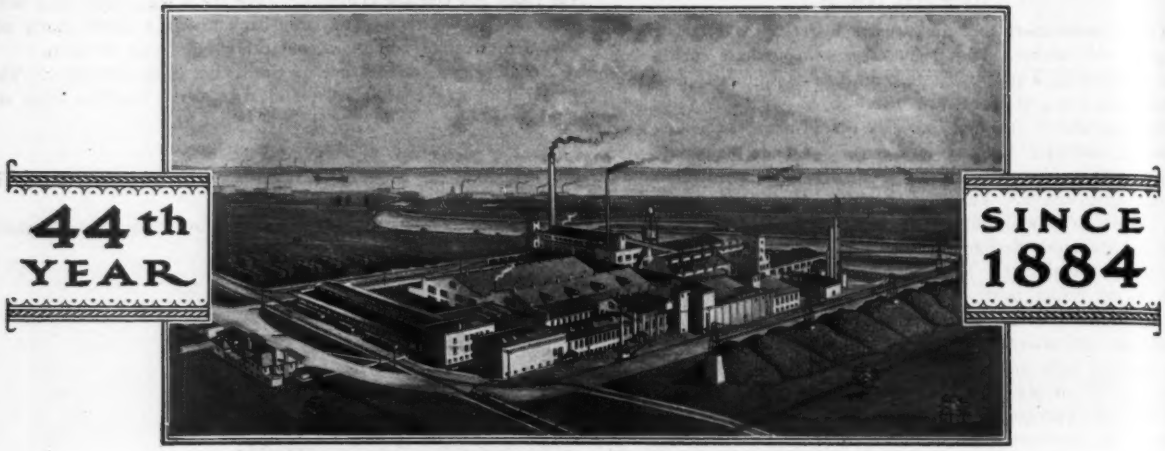
Two types of driers are available, the calcium chloride type, and the refrigerating type.

Our room was first fitted with the calcium chloride drier, shown in Fig. 4.

This was satisfactory until it became necessary to have more than one man in the room at a time, or one man in the room nearly all the time in hot weather. The calcium chloride drier also requires considerable attention in hot weather. A 400 pound drum of calcium chloride lasted two to three months under summer conditions. For these reasons we replaced the calcium chloride drier with a refrigerating drier.

We were operating our room at 50 per cent relative humidity. Under the standard humidity, 65 per cent relative humidity, the calcium chloride drier would undoubtedly be entirely practical for many installations, especially in more northern climates. Where it can be used, the total cost of the room and equipment would be approximately one half that of one equipped with a refrigerating drier.

The refrigerating drier is shown in Fig. 5. In this drier the cooling coil from a household refrigerator is housed in a well



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insulated box, and room air is forced over the coil. The cooling supersaturates the air and a portion of the water vapor freezes, or condenses. This leaves the air saturated with moisture, but at a lower temperature. If air saturated at 40 degrees F is heated to 75 degrees F, the relative humidity will only be 30 per cent. Thus a drying is effected by forcing air at 50 per cent relative humidity over the refrigerator coil, cooling to about 40 degrees F, and again discharging into the room, where it quickly comes to room temperature. Obviously the colder the air discharged from the dehumidifier, the greater will be the drying capacity obtained from the refrigerator. If the air discharges at 54 degrees F, no drying effect will be obtained for a room operated at 50 per cent relative humidity and 75 degrees F. For this reason the box housing the coil is well insulated, the compartment well baffled, and the outlet slide so adjusted that the air is discharged at 40 degrees F or lower.

The refrigerator which we are now using is Frigidaire, ½ hp. water-cooled compressor, with an 88F coil. This has proven entirely satisfactory for drying. Two men may use the room continuously in summer weather. This unit assists materially in maintaining the temperature in hot weather.

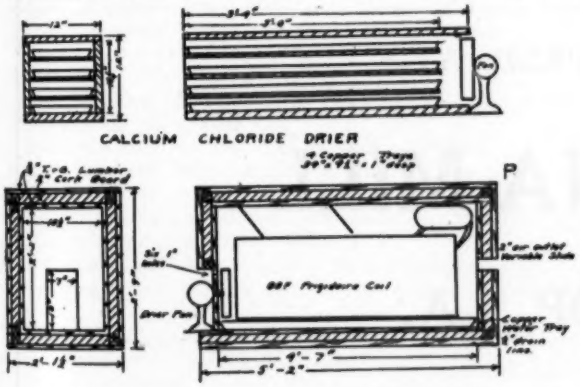
The compressor must be located outside the room. Compressors of 1 hp. of this type are now available, and may be necessary under more severe conditions, or for larger rooms. A large compressor would make it possible to eliminate the water cooler as previously mentioned.

A 12 inch fan should be used to agitate and drive the air through the cooling coil box. The fan motor is outside, and the blade inside. This may require an extension of the fan shaft.

The coil is set to operate on a 26 to 32 degrees F cycle. It is usually necessary to defrost the coil and remove the water only once a week. This is accomplished by opening the switch to the compressor motor, opening the drier box and allowing the drier fan to run until all ice is melted. The water trap is then drained.

Humidifier (Fig. 6)

For humidifying, a simple water tray humidifier is used. The humidifier fan is controlled by the hygrostat through a relay. For



Figs. 4 and 5

65 per cent relative humidity and dryer outside air, a more efficient humidifier may be necessary. Increased capacity may be obtained by heating the water, by using a spray, or by multiple trays.

Ventilation

The intake ventilator is located near the floor. It is a 6 by 6 inch opening with an adjustable slide. This slide is usually open from ½ to 1 inch. The fan which blows air over the heater is located directly in front of this opening.

The outlet ventilator is located diagonally opposite the inlet, near the ceiling. It is also 6 by 6 inches and adjustable. It may be open somewhat more than the inlet.

Miscellaneous Apparatus

Relays:

Standard telegraph relays are preferred rather than some of the cheaper relays now advertised. The difference in cost is very little. The relays should have a resistance of 30 to 100 ohms, and may be operated by dry cells or by a storage battery with

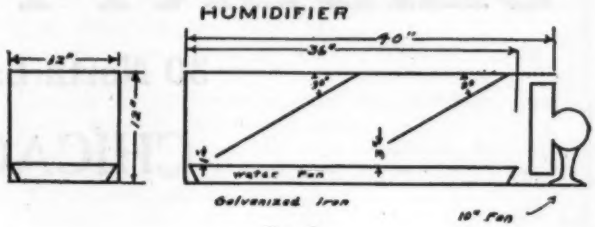


Fig. 6

a trickle charger. This eliminates faulty operation due to worn-out batteries. A front and back power relay is necessary unless a Mercoid Thermostat is used.

Hygrometer:

A hair-type hygrometer is desired for reading the relative humidity. This should be checked against a wet and dry bulb thermometer. With a hair hygrometer the relative humidity reading may be observed at a glance.

Wire Conditioning Line:

Sheets to be tested in the room are suspended from a wire above the shelves near the walls, by means of paper clips for conditioning.

Fans:

Induction fans, rather than the fans with the universal motors, are preferable. The recommended sizes are:

Heater fan and room fan, 8 or 10 inch.
Cooler fan and humidifier fan, 10 inch.
Drier fan, 12 inch.

Cost of Room:

The cost of the room, with complete conditioning and control apparatus, will range from $300 to $900, depending on the size and the apparatus used.

F—Determination of Humidity and Temperature

The relative humidity of the conditioning atmosphere shall be determined by means of either (1) a Sling Psychrometer, or (2) a stationary type of psychrometer having the air circulated over the thermometer bulbs mechanically. In both cases, the circulation must be at the rate of not less than 3 meters (10 feet) per second. When the Sling type is used, care must be taken to make the readings as quickly as possible after bringing it to rest.

The thermometers used for determining humidity and temperature must be accurately calibrated by comparison with certified standard thermometers and any corrections found necessary applied to the readings.

Note: It is recommended that thermometers approaching as closely as possible to the following specifications be used:

Range 0°C (32°F.) to 50°C. (122°F); graduations, 0.29.

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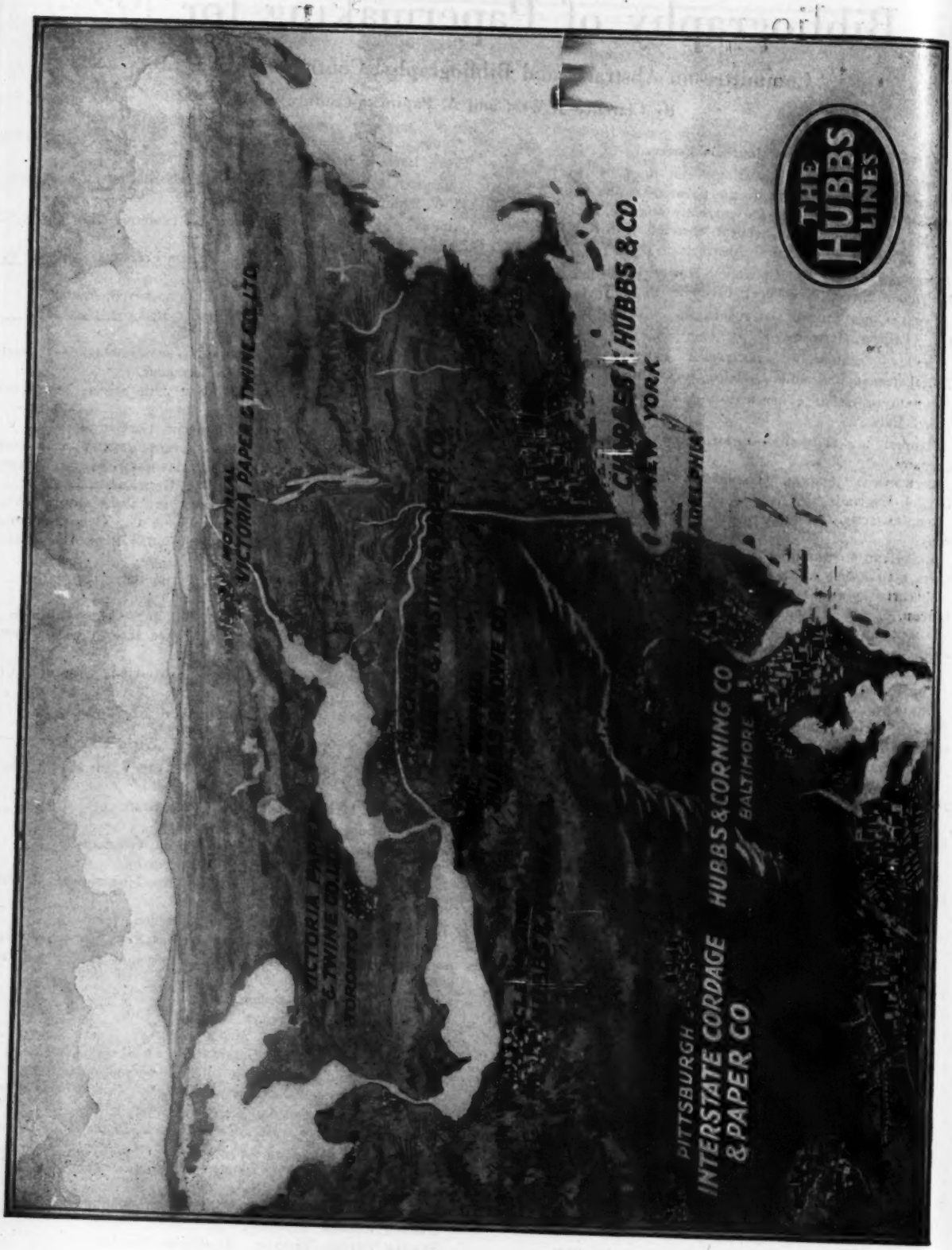
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Adhesives
Analytical
Bamboo
Barkers
Beaters and Beating
Belts
Bibliography
Black Liquor
Bleaching
Boards
Causticizing
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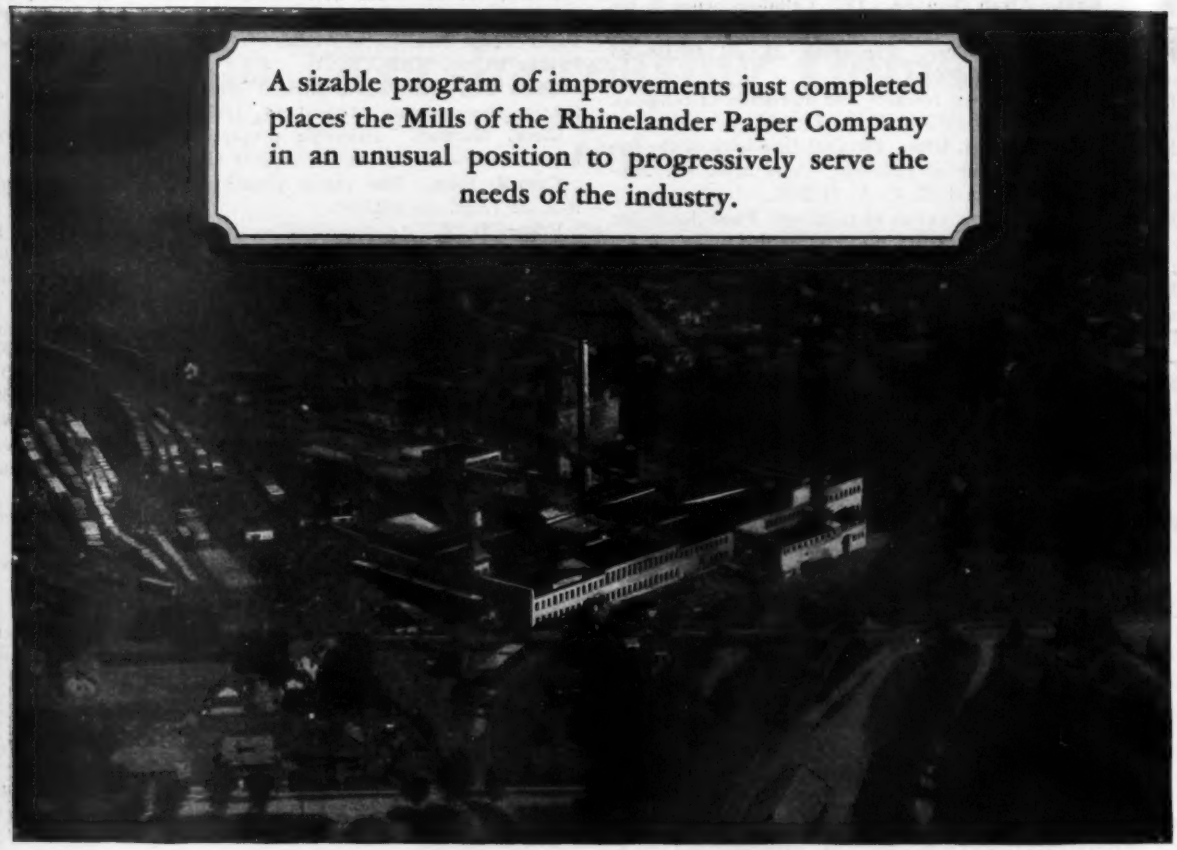
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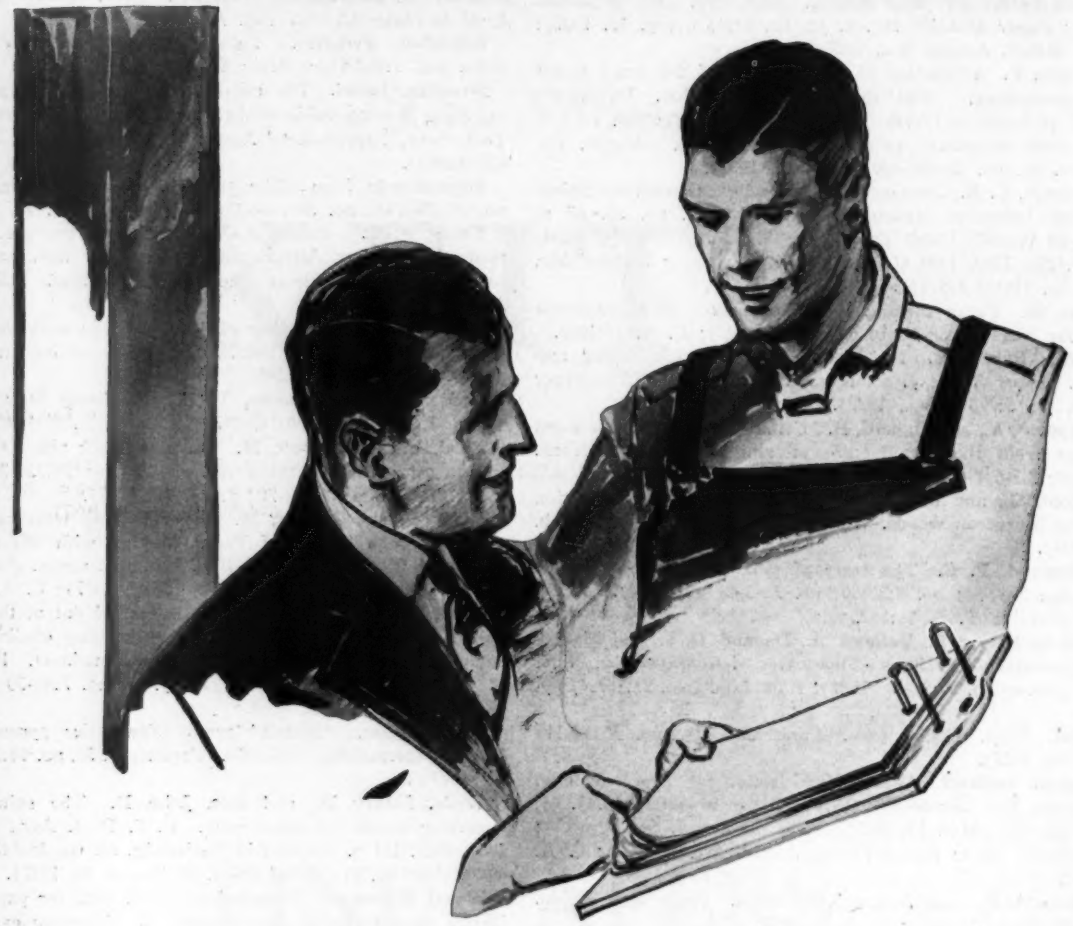

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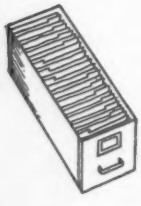

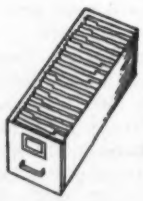

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CELEBRATES 25th ANNIVERSARY

In December, 1902, twenty-five years ago, the well-known German paper journal, Der Papierfabrikant, first saw light. In honor of the occasion, the publishers have issued an Anniversary Edition, dated Christmas, 1927. This issue is three hundred pages in size and contains a number of interesting articles centering around this event.

The first article is concerned with a history of the paper, its development during the twenty-five years of its existence. This is followed by an article which seeks to define the relations between the trade press and the trade associations. It pays particular attention to the German paper makers association as well as to the association of German paper chemists and technologists. The workings of the Verein de Zellstoff und Papier Chemiker und Ingenieure (Association of Pulp and Paper Chemists and Engineers) are described in a separate article.

An article is also published on the economic progress of the paper board industry during the past twenty-five years in Germany. Another article is devoted to a discussion of the paper making profession. It contains interesting tabulation showing the growth of the paper making industry in Germany since 1902. The money paid in salaries and wages during 1902 was 50,659,000 marks and during 1926 189,010,000 marks.

An interesting article describes the progress in the technical side of paper making during the past twenty-five years. This article reviews all the various branches of the industry in brief detail. It is followed by an article that treats in more detail of the power question. Dr. Schwalbe has a very interesting and detailed article on pulp and paper progress during this period. In another article the Cartel problem, that is combination of industries, receives attention. The development in straw pulp, in rayon, in German foreign trade in paper and pulp products, in mechanical wood pulp and board manufacture, in pulp manufacture, in the historical progress of making pulp with the aid of alkalies from 1828 to 1872 and other subjects of interest are discussed in detail in numerous articles.

MORE NEWS PRINT FROM SWEDEN

Swedish production of news print during the first 11 months of last year reached a total of 200,841 short tons, according to a report received here. While this is a decrease of about 1,000 tons as compared with the corresponding period of 1926, shipments to foreign countries show an increase of 163,889 tons to 166,541 tons during the same period. The increase in 1927 exports was due almost entirely to an increase of around 50 per cent in shipments to the United States.

TO BUILD WAREHOUSE AT ST. HELENS

The St. Helens Pulp and Paper Company, St. Helens, Ore., has let the contract for a large warehouse building to Robertson, Hay and Wallace. The structure will be one story in height and 200 x 100 feet in dimensions, of brick and concrete construction. Engineers of the paper company prepared the plans. It is expected that the work will be completed in about sixty days.

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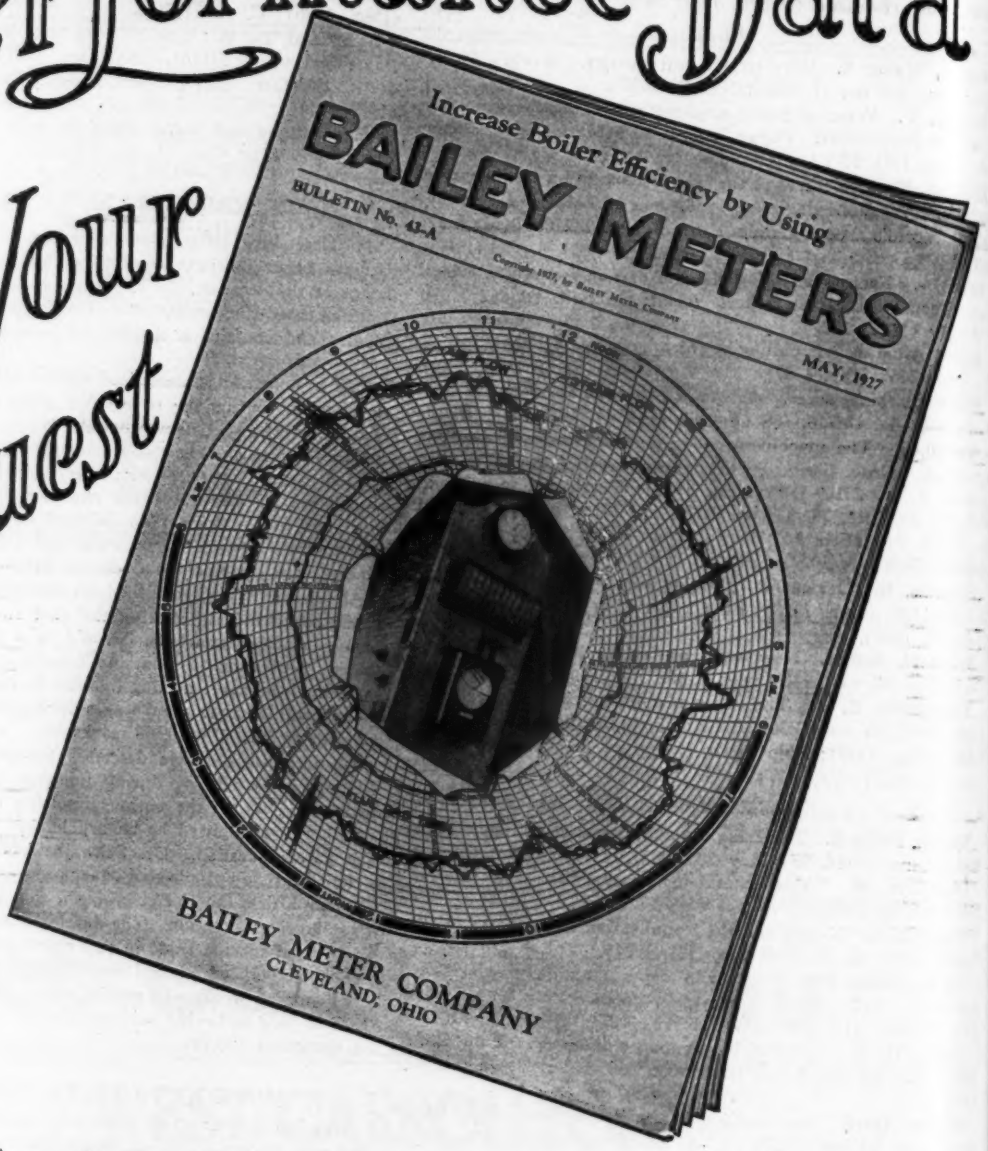
Performance Data

at your request



This new bulletin gives performance data concerning the Bailey Boiler Meter which records Steam Flow, Air Flow and Flue Gas Temperature. It tells of numerous instances where large savings have been effected by the use of Boiler Meters in industrial plants as well as central stations.

The bulletin contains chart records which have been reproduced in color to show the kind of boiler operation obtained before and after the installation of the Steam Flow, Air Flow guide. This information, together with test data and cost figures showing the actual savings in fuel consumption, labor and additional boiler units will be of interest to you.

Write for Bulletin No. 43A.

Bailey Meter Company

1056 Ivanhoe Road — Cleveland, Ohio

Bailey Meter Company, Ltd., Montreal, Que.

GENERAL PAPER MERCHANTS MEET

National Paper Trade Association of the U. S. A. Holds Twenty-Fifth Annual Convention at The Waldorf-Astoria Hotel, New York

W. N. Gillett, of Chicago, Is Chosen President of the Association for the Ensuing Year—Frank E. Floyd Will Assume the Secretaryship on March 1—Prominent Paper Merchants from All Over the Country Discuss Topics of Vital Importance to the Trade—Splendid Addresses are Made by Messrs. Olmsted, Blackman, Sisson, Raybold and Others—To Meet Next Year During Week of February 18.

THE Fine Paper Division of the National Paper Trade Association of the United States convened at two-fifteen o'clock, in the Waldorf-Astoria, New York City, on Tuesday, February 21, 1928, Vice President Gillett presiding.

VICE PRESIDENT GILLETT: Will you be seated, please? In case there is any misunderstanding about what meeting this is, I want you to ignore that banner up there. (Indicating.) This is not the American Paper and Pulp. In fact, we won't allow any manufacturers in the room at all. (Laughter.)

The chairman of the meeting has considerable advantage over the members, because he never can be late to a meeting. It reminds me of a little boy wandering slowly home about quarter of seven at night, who met a neighbor on the way. The neighbor said, "Aren't you afraid you will be late for dinner?"

"No, he said, "I have the meat with me." (Laughter.) He couldn't be late.

This meeting, gentlemen, has more significance than our ordinary annual meetings. It is the twenty-fifth anniversary of this association, it is our silver wedding, so to speak. Our union has been a very happy one, and one that has been blessed by many healthy offsprings. Like any other union, we have had our differences of opinion. That comes about in any relations between people, but at least we have had no divorces, and I don't look for any. This is no trial affair, no companionate marriage. This union is based on mutual confidence, respect and tolerance, and those things which are worth while, endeared by the test of time. This association has made good, has grown, and will continue to grow. I am very glad indeed to welcome you to our twenty-fifth anniversary.

Report of the Secretary

We will have the report of the Secretary.

SECRETARY CHAMBERLAIN: Mr. President, I am reporting the meeting of the Executive and Administrative Committees.

A meeting of the Executive and Administrative Committees of the Fine Paper Division was held in the morning of February 20, 1928, with Vice President Gillett in the Chair. Twenty-five members were present.

W. N. GILLETT, PRESIDENT

The report of the Marketing Committee was made the first item of business and was presented by James L. Smith, Chairman. Mr. Smith did not go over the ground that had been covered in previous reports, but outlined what had been done since the fall meeting to obtain the definite support of the members. He stated that substantial encouragement had been received and contracts had been signed by numerous members of the Chicago group and in the Northwestern and Central States Associations. He expressed the belief that he had sufficient support to promise the success of the plan of National Publicity and urged that it be put into effect in some organized form—or else dropped. On questioning Mr. Smith gave some information as to the methods and terms under which similar plans are being handled by advertising agencies.

A free and lengthy discussion followed, bringing out various divergent views and participated in by several members. At the conclusion it was voted on motion of Mr. Zellerbach that the Board of Directors be asked for an appropriation of not to exceed $7,500 to provide a guarantee, or to be used otherwise in an effort to obtain definite support for the plan.

Mr. McLaughlin reporting for the Survey Committee proposed to recommend a program for studying and measuring efficiency and economy in the organization and operation of Fine Paper houses. This met with unanimous approval.

A. W. Leslie, Chairman of the Efficiency Committee reported that the Committee would discuss carton packing as involved in the recent action of a prominent manufacturer. A discussion and study of the problem of sampling from the viewpoint of the merchant was also proposed.

R. E. Myers, Chairman of the Clearing House Committee, stated that their work had had to do with the variation in mill practices, particularly as to handling different quantities of paper, etc.

The subject of job lots and seconds was presented for the Central States Association by

their representative, A. L. Brown. It was voted that the Chair appoint a Committee of Investigation with a view to improving conditions resulting from the sale of this class of merchandise.

The Committee adjourned.

VICE PRESIDENT GILLETT: I believe we have as guests in the room some representatives from the Canadian Paper Trade Association. If they are here, I will be very glad to introduce them. Mr. Moffatt, the Secretary of the Canadian Paper Trade Association, and Mr. Larkin, who is the Chairman of the Mills Relations Committee, and Mr. Hall who is the First Vice President of the Canadian Paper Trade Association. If these gentlemen are present, I will be glad to have them arise, and we will introduce them.

. . . Mr. Moffatt was the only one present. He arose and the members applauded. . . .

Vice President's Report

VICE PRESIDENT GILLETT: I will take certain liberties with the program because conditions have come about that make it necessary to make certain changes.

It is a time-honored custom for the Vice President to make a report. I realize that nothing weakens a report so much as reading it, but for the interests of accuracy and as a matter of record, it is sometimes necessary to do so. I know when I sit in a meeting, I very frequently wonder how many pages there are of a report. There are three pages to this report; it is not very long.

My term of office as Vice President of this Association expires when my successor is elected at the General Meeting tomorrow. The two years during which I have held this office have been active ones—full of pleasure and satisfaction, but not without disappointments. My intention and constant aim has been to serve the membership to the best of my ability, to carry out the wishes of the majority, and to be guided by the desires and instructions of those to whom your officers are responsible. I have done all I could to preserve the integrity and standing that this Association so justifiably enjoys, to build up confidence, stability and harmony and to contribute something of a constructive nature to the industry.

The report I originally prepared to present at this meeting dealt with the economic status and the problems of the distributor in general and the paper merchant in particular, but on second thought, I decided against such a report and in favor of confining my remarks to a few statements directly and briefly on the subject of our activities and our present position.

Shortly before I took office, a Committee had been created at first called the Survey Committee and later changed to the Administrative Committee, consisting of representatives from various markets to whom recommendations and suggestions were to be made and from whom approval received. Such matters as were approved by this group were then placed before the Executive Committee of this Division for its approval. In order to conserve time, this committee and the Executive Committee were authorized to meet co-jointly. In accordance with this basis of operation, every major plan, recommendation and activity during my administration has had the approval of both these committees before they were placed before the membrship.

Upon assuming office, I felt that there was a need for certain committees, entirely new to this Association, for the organization of which I received the approval of the Executive Committee. These committees were the Efficiency Committee, the Marketing Committee, the Clearing House Committee and the Publicity Committee—with the purposes and functions of which you are entirely familiar.

I wish to take this opportunity to express my sincere thanks and appreciation to these Committees and more particularly their Chairmen for their splendid work and the cooperation they have extended. It is no small matter for busy men to contribute their time, energy and thought to the problems of our industry and these men have not spared themselves to serve us.

Nothing has developed to disprove the judgment of the Survey, Administrative and Executive Committees as to the soundness of the original 1,000 sheet plan, and in fact, the anticipated results therefrom have been amply attested to by its successful operation, even in modified form, in many markets. That it was not a complete success, was due rather to the failure of some markets to adopt or to maintain it. This fact again demonstrates that unanimity and solidarity of action are prerequisites to the successful introduction of any measure involving major changes in merchandising.

By reason of mill proprietary lines, suggested resale schedules and overlapping territory, markets are no longer independent of each other but rather are closely and vitally affected each by the other.

The Efficiency Committee investigations and report on the new developments in packing, involving the use of cartons, were conducted solely from the standpoint of the carton as a physical unit and the effect of its use in the merchant warehouse. That this new departure in paper packing, under certain conditions offers material advantages in the way of warehouse economies and efficiency has been repeatedly demonstrated and proven.

However, as the carton will not adapt itself to all warehouse conditions, at least without material and possibly expensive changes and also because many merchants hold the opinion that the carton may detrimentally affect the paper merchant's economic status, no officer or committee has ever recommended that this method be endorsed or approved by the Association.

Furthermore, it is perfectly obvious that no resolution alone will deter merchants who approve of cartons, from using this method and equally obvious that resolutions alone would not actuate those who are opposed to it, toward adopting the carton packing method.

Carton Packing is here and if it proves to be economically and practically sound, it will continue regardless of personal preference, but if it does not so prove, it will automatically disappear.

It is important, however, for efficient warehousing, that the carton be standardized so far as possible and also that the schedule of carton contents as approved by this Association be adhered to.

One of the most important projects considered by this Association is the Marketing program as presented by the Chairman of that Committee and endorsed by the Executive and Administrative Committee and at the October meeting by the membership. There is no doubt but that the efforts of the advertising agencies have resulted in a development of publication advertising to the disadvantage of direct mail advertising and that discriminatory third class postal rates have reduced the use of the mail for advertising messages.

A material increase in the use of printed papers must come largely from an intensified, cooperative campaign to educate the advertiser to the advantages to him in the use of direct mail selling material. Competition today lies not so much within an industry as it does between industries; newspapers, magazines, periodicals, billboards, etc., are the great competitors of direct mail advertising, and as much of the paper sold by the merchant is used in direct mail material, so also are these other media competitors of the paper merchant. Nearly a hundred industries have cooperated to widen the market for their product and with but a very few exceptions, the increase in the sales of each has been tremendous. This Association can, if it will, do as much for their industry and the time to do it is now.

The paper merchant, like other distributors, is facing today problems which he must solve if he is to continue to serve the mills and the paper-buying public promptly, effectively, satisfactorily and at a profit.

It is no doubt a fact that, with but a few explainable exceptions, the paper merchants have not in the past few years made a reasonable, adequate or proper profit. This in spite of fair volume and exceptional efforts at economies and reductions in overhead expenses.

This is largely due to keen competitive conditions, and to the large number of small orders we are called upon to handle. Competition has resulted in an over-extension of service in the way

of deliveries, service departments, promotion work, advertising, sampling, etc., and also to unprofitable territory expansion and the invasion of unnatural markets.

While it is not possible to legislate service, every merchant should receive a proper return for service rendered and therefore, I want to emphasize the present necessity for the adoption of such sound measures as appear to contain a remedy for this condition.

The limit of the power of cooperative effort has never been measured for the limit has never been reached. How great we may grow, how prosperous and complete we may become, depends upon ourselves, our desire and willingness to work together. (Applause.)

Mr. Olmsted made a very interesting speech which was warmly applauded.

VICE PRESIDENT GILLETT: We will pass on to the report of the Marketing Committee, by Mr. James L. Smith, who is in the very rear of the hall.

Report of Marketing Committee

JAMES L. SMITH: The Marketing Committee has done a lot of work since last year, but I don't know what sort of a report they have to make. In a special meeting last night, they came to eight or ten conclusions, one of which was as Mr. Olmsted said, to "try to chasten and chastise," but they decided they couldn't do either one, or both, or any.

Since this body a year ago in this place approved of the so-called "marketing plan" that your marketing committee put forth, they have done as instructed by you, and completed in quite a measure, the so-called "marketing plan." Of course you all know, many of you have heard it so many times that you are sick and tired of it, and while your Committee has all of the interesting exhibits here and in Chicago, they have been, I think, very charitable, and have not brought them here this afternoon.

Since the October meeting, when the Marketing Committee made a presentation of the plan as completed, they have endeavored to do as instructed, and sell the membership to the National Paper Trade Association. We haven't done a very good job because they haven't worked at it all the time. Fortunately for themselves and unfortunately for the marketing plan, some of the Marketing Committee have had a pretty busy job taking care of the business, and some of the others have been trying to hang on to their jobs. All we have been able to do is to see the merchants in Minneapolis and St. Paul. In Detroit, they presented the plan to the Central States Association, and at a special meeting in Chicago of the merchants, they presented the plan, also.

The results in Minneapolis and St. Paul are seven out of the ten, and with one member of another firm waiting for his partner to come back from Southern California, it will probably give us eight out of the ten. The Central States have now, according to the last report I had from the Secretary, fifteen signed contracts to go through, fourteen not heard from, and eight who either say "no," or "we will wait awhile," so that gives you very close to one-third of the minimum that you have asked for from your paper merchants.

Of course you haven't, or your Committee hasn't approached the mills of the allied interests. They can't go to the allied interests until first the merchants have signified their approval. Now it is true you did approve the thing a year ago here in this room, and again in October, the general body approved the plan and said, "Fine and dandy, let's do it," but a dozen or a hundred approvals, or dozens or thousands of recommendations and hurrahs doesn't do it.

The only thing that counts for anything is approval as evidenced by the signed contracts to pay your little share of this big job. When I say, "your share," qualified by "little share," it is a very small share, when you compare it to your present costs, advertising costs, or the percentage or shares contributed by any other industry. Ours is less than one-tenth of one per cent—probably much less than that if we take into consideration the increase in business that we should have.

Now, the majority approve the plan when they understand it. There are a few who do not approve of it, but the majority think we ought to go ahead right away, tomorrow, or next week.

We should have started the market plan perhaps ten years ago, in the paper industry. If we wait to start a marketing plan until we have net profit control, it is apt to be another ten years or a lot more.

The paper industry, or as Washington considers it, the "graphic arts industry," as we should consider it too, is, I believe, the second industry in these United States. The second industry is a pretty big one. That takes in all the factors in the production of printed material. The paper is given by some as the fourth and by others, as the fifth industry—at any rate, a pretty big industry. And while it is the fourth or the fifth, it is not known, except by very few.

Once or twice a year, we have meetings. In our little trade papers we get a lot of nice copy, but the world doesn't know much about the paper industry. I think in a good many instances, the world has no appreciation of the value of the possibilities of the right use of paper. And while the Laundry Owners' Association and the little Florists, and the Brick and the Sauerkraut, and the Paint people have all done a very big job, and a very satisfactory job, we haven't done a thing. There are some who think that now is the time to do it.

It seems plain to me, although I don't expect everybody to agree with me, that if other industries, much less important than ours can get twenty or forty per cent a year, and in four or five years get fifty to two hundred per cent increase in business, we ought to get twenty per cent, and from all the failures I ever hear anything of, twenty per cent would be beautiful, wonderful. And if the rest of these lesser industries, (although bigger because they have done a better job than we have) had gotten fifty to two hundred per cent increases, certainly we can suppose that we can get twenty and fofty per cent from the job we have in

FRANK FLOYD, SECRETARY

mind. It is a mighty sweet thing. The cost is small. The return on the so-called investment or expenditure has possibility of return in three or four different ways. That is problematical, but that is true more or less with anything else we do. We come to New York to these meetings from various parts of the United States and spend lots of money hoping to get some good from them.

Before we started, if anyone asked you or me how much we were going to spend and figure the percentage of what we were going to get in profit for the money, time and energy, I don't think we could possibly say "yes," we would receive a profit. There isn't any possible promise of a certain, definite return in sales, advertising and merchandising that anybody ever made. If there were, why, the world would be full of millionaires and golf players and what-not, instead of a lot of hard-working men, wondering where next year's profits were coming from.

Well, the Marketing Committee, as I said before, went from the February meeting to the October meeting, completed the plan, got the approval, had instructions to go ahead and complete the sale. But that is all they have had. That sounds like a lot, but it is very little.

They asked for more than instructions to go ahead this week, and they didn't get it. What you decided, was, as I understand it, to wait a while first, to investigate a little further and survey some more, although all the surveys have been made. Anyway, you decided to wait, so I don't see a thing that the Marketing Committee can report further than what we have done. The potential possibilities, the necessity for a big, concerted job is there, and beyond that I can't say a thing but that it is too bad that you decided, as the rest of them did. Go ahead, do it now, next year, or somewhat later.

VICE PRESIDENT GILLETT: Does any member wish to comment on Mr. Smith's report?

MR. BROWN: Gentlemen, I was bold enough yesterday to make a few remarks at the Executive Committee meeting, so Noble asked me to speak my mind today, and that ought not to take long. So I come before you with a good deal of timidity to speak to men that have been in the business much longer than I have, and I plead your indulgence because of my gray hair, even though you condemn my enthusiasm in coming here and speaking to you men that are much older than I.

As I understand it, this proposition was endorsed last year in a certain degree. In other words, Mr. Smith was authorized, or the Committee was authorized, to spend two thousand dollars of which they have spent about eighteen hundred dollars and they have about twenty thousand dollars worth of work. Those of you who have not seen the work, the displays, the books that have been gotten up, should take the opportunity to do so. It is wonderful work, and we have gotten our money's worth so far.

At the meeting in Chicago, the convention went on record as approving the proposition, and Mr. Smith was authorized to go out and get the signature on the dotted line. I just mention that because there has been some misunderstanding about that. In October, the proposition was approved.

To go over this a little more in detail, there are sixty-eight of these campaigns advertising various industries which are well known and are successful. The statistics are available, they have been published by some of the magazines and newspapers. You can get them. So it isn't a matter of what Jim Smith says or what Noble Gillett says. The facts are available to all of you if you care to read.

The average time for a successful campaign has been seven years. Therefore Mr. Smith feels that we ought to embark on a four-year plan or not attempt it at all.

If you wish to investigate our own industry, go to the mills, the Hammermill Paper Company have been doing this kind of work for a long time. I think you will all agree with me that they have been fairly successful. At any rate, they think well enough of it to go ahead with it this year in a bigger and broader way than ever before. The Strathmore people have been doing it for a good many years. They have made a little money, and they are going ahead with it. The S. D. Warren Company have already much the same plan in their More Business Service and their other advertising. They are going ahead with it, so they must think well of it. So we have some precedent not only in other industries but in our own industry. The records show that about ninety-five per cent of the industries that have attempted it have been successful, that it has made money for them, increased their sales and resulted in more profits.

In our own particular field, the Typothetae first thought well enough of it to put it on in a way to help themselves, and I am told that before they started the Typothetae movement in a big way, that their classification as regards other industries was about the same as barkeepers and barbers. Their industry was in the eighty-fifth position in the United States and they have raised that until they are now, we will say, the fifteenth, a tremendous advance. You men know as well as I that they now pay their bills, the majority of them, and they have cost accounting systems better than they used to.

The Greeting Card people have made a great success of it, so much so that the engravers are starting a similar plan, and all of you are being deluged today with letters from the engravers asking for your assistance.

I am going to take a few minutes time to read this to you because it is printed, it is available, and it shows what the Greeting Card Association has done, scatter sunshine with greeting cards.

In 1913, the volume of retail sales of greeting cards was about $10,000,000. A considerable part of these were imported. The domestic manufacturers had no cooperation among themselves and little confidence in each other. Accusations of stealing each other's styles and designs were not uncommon.

In 1914, a group of these manufacturers became convinced that it was better to work together for the development of the business rather than separately for the destruction of each other, and the Association was formed.

In 1914, cooperative advertising was started with about seventy-five per cent—not a hundred per cent—of the production represented. Their first efforts were not entirely as anticipated, due largely to splitting up their appropriation among too many different media. This, however, has been remedied, and the accomplishments are highly satisfactory.

Retail sales in 1922 were approximately $45,000,000; in 1923 nearly $50,000,000; in 1925 between $55,000,000 and $60,000,000. There are now thirty-eight members of the Association who have about 85 per cent of the business.

Before the advertising started, ninety per cent of the sales of greeting cards was in the holiday trade and the orders were not received by the manufacturers until November or December, thus causing grievous manufacturing conditions. The advertising, however, has developed the use of greeting cards for other occasions which now constitute about 30 per cent of the business. Furthermore, the manufacturing season for holiday cards has been extended until many large orders are placed as early as February and March.

One of the important results of their advertising has been the higher plane of competition between dealers and a more successful displaying of greeting cards which lead to a real development of the business.

As a by-product, the business reached such proportions that the Association was duly recognized by Congress and adequate tariff protection against foreign competition was granted.

They have increased the business, and they have made more money, and that is what we are after, and any of you that think it hasn't been a successful proposition, come to Cincinnati and see the tremendous building that the Gibson Art Company, for example, have built out of the small business of greeting cards.

Mr. Smith has said that the graphic arts and allied industries, taking printing and paper, was the second industry in the United

States. How many of us realize that, and that the paper industry alone is fourth or fifth? I wonder how many of us know that, and how about the general public? They certainly don't know it.

Many of you get monthly letters from your banks, from the National City and other banks, telling about conditions. How often do you read about the conditions in the paper industry? You read about the steel industry, and they have a foundation for research work, for keeping them before the public and for various purposes.

You have the leather industry associated, working together, and to my personal knowledge they have a three hundred thousand dollar foundation at the University of Cincinnati.

You have the automobile industry—you hear about them. These letters tell you about the textile industry, and so on. And the farmers certainly don't forget to tell you about their troubles. But who says anything about the troubles of the paper merchant?

The trouble has been that we ourselves haven't advertised our industry. Now, why aren't we telling the public about ourselves and what an important position we play in the welfare and the education and the happiness of this country?

The national magazines are starting to do it, and they are doing a good job in selling their own proposition. All you have to do is to look at the growth of the Saturday Evening Post and the American Magazine and a great many others.

Your newspapers are doing a good job. When you get your Sunday edition of your home paper, it is so bulky, so much reading there that you couldn't read it if you took all week to do it.

And at the last meeting of advertisers in Cleveland, those two branches of advertising were represented; in other words, the national magazine and the newspaper. But there wasn't a representative of the direct mail people in that convention.

Now, how can we expect to get proper recognition in this country or in Congress or any other place if we don't make the effort to? We are asleep at the switch. As a result, two years ago we had a postal bill put through, and last year there were 900,000,000 less mailing pieces which went through the mail than the year previous. You fellows don't have to do much figuring to see how much that means to you in the consumption of paper and what it means to the printers in the reduction of their orders. Mr. Bull will tell you what it meant to him in the postcard business in the city of Chicago.

Now, we don't think that the advertising that the national magazines and the newspapers are doing is not all right. We take our hats off to them. They are doing a good job. But we ought to do the same, and we ought to get our proportion of the money that is to be expected by the national advertisers.

If there is a reduction in postal rates—and we have every reason to believe there will be this month or next month, at least in this Congress, because the Postmaster has already agreed to a reduction on postcards and some other lines, some other classifications—there is no more opportune time than now to get busy and get together and take advantage and tell the advertiser that he can spend a portion of his money at least to good advantage in direct mail advertising, and it certainly is up to us to do that telling.

Now, the details of this plan I am willing to leave to a committee who have studied it, who know more about it than I do. I have my own affairs to attend to. I would prefer to have them atend to it, and undoubtedly the rest of you men are in the same position.

Their present plan contemplates advertising in the *Saturday Evening Post* thirteen appearances inside of a year. As to whether or not the *Saturday Evening Post* is the best medium, I don't know. I know that it probably reaches more people in the United States than any other single magazine.

The proportion of magazine advertising as compared with direct mail advertising in this present proposition is about forty-sixty. In other words, the plan would be that we would spend forty per cent on space advertising and sixty per cent in the proposition that we are advocating, direct mail.

Probably we should go into some trade papers when we have the money and the time, but, as I say, that is a detail that we can well leave to the committee. Some people say that our proposition isn't large enough, we are too modest. Well, there is no limit to the money you can subscribe. If you want to increase your subscription, you can certainly do so. One-tenth of one per cent seems as though it would bring us a fair amount of revenue, and let's get the one-tenth of one per cent before we start talking any larger appropriation. Let's see what we can do with that.

The paper industry, as far as the merchant is concerned, as I see it, certainly needs something, needs something to bring us together, to cement us in our work. We have tried one thing and another. I am not here to condemn the Thousand Sheet Count or the Service Charge or any of the things we have attempted, but at any rate I think you will all agree with me that we need something to bring us closer together, and where we are spending our money in a common cause I think that that will help us get together. But we will have to get together ourselves before we go to the mills and ask them for some money or before we go to the printers and ask for money or before we go to the ink men and the machinery men.

You have all taken part in community drives, and if you reversed the position, if you were all mill men and I came to you and asked you to make a subscription to this proposition, you would say, just as you said to the printers of the Typothetae, "How much are you going to give yourselves? Is the Typothetae a unit? Is your Association a unit?" Until we can say that we are a unit and that we are ready to go ahead, I don't see how we can very gracefully ask the mills to support us. Once we have gotten together and have gotten the mills interested, believe me, the mills and the merchants are going to work more closely together than ever before. If I am any judge, from what George Olmsted said, that is what we need, what the mills are looking for, what they are hoping and praying we will do.

Now, as Jim Smith said, he was told to go ahead at Chicago in October. He went to Minneapolis and did a good job. He sold seven out of nine, with the prospects of eight out of nine. Possibly he could make it one hundred per cent. In Chicago, I understand it was about an eighty per cent acceptance of the proposition. Possibly some of the men were not entirely in favor of it, but they didn't want to be obstructionists, and so they signed on the dotted line and are willing to go through with it.

In the Central States, we have about fifteen signed up, and I am quite confident that we will have seventy-five per cent of that Association signed up before very long.

So we haven't been able to go any faster. Jim Smith has another job besides this, and he hasn't been able to cover the country. I feel that he should not be discouraged because he comes before you today without the signatures of seventy-five per cent of the members. I know that there are men here in the meeting today that don't fully understand it, and I believe that as soon as you do understand the proposition, that you will come in and get on the band wagon.

So I am going to offer this resolution:

RESOLVED, That the new Vice President of the Fine Paper Division be authorized to appoint a committee of three members to assist the Executive Secretary to devise ways and means to carry into effect the plans of the Marketing Committee in reference to national publicity to increase the consumption of paper.

...A motion to adopt the resolution was seconded by Mr. McLaughlin...

VICE PRESIDENT GILLETT: Are there any questions you want to ask Mr. Smith or anybody else? This, as I understand it, contemplates no expenditure on the part of the National Paper Trade Association whatsoever.

...The question was put to a vote and carried unanimously....

VICE PRESIDENT GILLETT: Mr. McLaughlin has been the Chair-

man of the Survey Committee for the past year. He made a report before our Association last October, and he made the skeleton of a report before the Executive and Administrative Committee meetings yesterday. I will be very glad indeed to have Mr. McLaughlin present his report.

Report of Survey Committee

W. C. McLAUGHLIN: The problem of your Survey Committee is, as you know, to devise methods of improving the conditions of our business, acting on the assumption that most of us at any rate, feel that we do not derive a satisfactory net income from our activities. This is a point on which we have, with only one or two exceptions, always been unanimous.

In the past, several attempts have been made to bring about a greater net income, by increasing the size of the order, and in other ways which had to do solely with the sales part of our business. This time your committee is going to suggest something radically different, and something which we hope will meet with your approval since it will in no way be affected by the acquiescence or lack of it, of our customers, nor need we be concerned as to what our competitors may do.

Furthermore, it may well be claimed that an industry or organization should not attempt to seek a greater net income by asking a higher price for their merchandise, until they are convinced that all possible economies in efficient operation have been introduced.

Up to the present time no yardstick has been discovered for the proper measurement of the very definite functions that go in our business—probably because each of us has felt that his own particular business was run in a different way than any others, and that a rule or a suggestion which would be applicable to his competitors would not be applicable to him.

This is, in a very material sense, a fallacy, since all of us do exactly the same things, day by day, in relatively the same way. For instance, we all have a sales force who write out orders. That is, we hope they write out orders. Now it is immaterial whether these orders are written on blue, pink, or white forms, what their size may be, whether they be written in duplicate, triplicate or quadruplicate, on a pad or an order machine.

After these orders are written out, the credit is O. K.-ed, the price is O. K.-ed, they go to a man who fills them, they are delivered and a receipt is brought back. A girl or girls carry out the extensions, figure the profits, the order is billed and entered on the customer's ledger sheet.

We all have bookkeeping departments who do essentially the same things day by day. We have credit departments, filing departments, we have the executive end of a fine paper department, and perhaps a coarse paper department as well.

Who knows how many orders one girl can bill, extend or enter in a ledger? Who knows when that point is reached when two girls must be employed to do this work? Who knows whether or not his credit department in its entirety is being operated on an economical basis?

It is the opinion of your committee that a standard or method of measurement should be devised which would enable merchants doing say one million or two million dollars' worth of business per year, to know exactly whether they were operating economically and efficiently, based on the similar operations of their competitors, or if perchance they were exceeding the standard or average.

We are convinced that it is most essential that paper merchants become more familiar with the detailed conduct of their business if they are to survive the great change that is taking place in wholesale merchandising at the present time.

How can this best be accomplished?

To distribute pamphlets, no matter how aptly written, does not seem to accomplish the result, since many people do not read them understandingly, and many more assume that they are written for the other fellow, but not written for them.

It is, therefore, our suggestion that we start a very elementary questionnaire. When we say "questionnaire," we know there is something inside of us which instantly arises, antagonistic to the idea, but nevertheless, we have a questionnaire which we propose sending out. It will include some simple questions.

If, when this questionnaire is sent you, you will fill it out and return the data to your secretary, he will make a digest of your answers and return to you the average answer, if we may put it that way, to each of the questions, as well as the best answer—the lowest cost of operation, in other words.

On receipt of this digest you can immediately determine whether or not you are operating a particular department economically, based on your fellow merchants' experience.

It will be immediately apparent to you that these questions are not so personal that you need fear sending in the information. For instance, it would be of extreme interest to your committee to know whether one particular billing department is run better than another; and personally, if I find my cost of operating any department is above average, I am going to be very much interested in finding the reason.

The installation of modern office machinery to replace longhand work may be one answer. The sub-dividing of the duties of various departments, in different ways, may prove a short cut; but at any rate, if enough of us will send in these questionnaires, properly filled out, the paper industry will be able for the first time in its existence, to devise a method of correctly measuring results.

To put it in another way, suppose that the entire industry, simply because of such a method of measurement, was able to function, to operate on a degree of efficiency equal to the most efficient of us all, would not that be worth while?

Or let us suppose that one man has developed the most efficient method of billing, another of bookkeeping, another of handling credits, and we combine these points, each in our own business, think of the saving in overhead expense.

Now let us answer in advance the man who says to himself, "I am pretty good; I, by my ingenuity, have devised ways and means of conducting the detail of my business that places me in a better economic position than my competitors, and why should I tell them about such methods?"

Gentlemen, we are firmly convinced that the time is almost here when it is going to be extremely difficult for any man to conduct his business excepting by the most economic means, and so long as you have competitors who are operating on uneconomic or unscientific methods, competitors whose business is sick, and who are *unable* to diagnose the sickness, what is their first reaction? Inevitably, it is to get more business whether or not it can be had at a profit; and the more competitors you have, filled with the idea of getting more business on an unprofitable basis, the more difficult it is going to be for you to conduct your business profitably.

As a government, we succeed only in so far as the communities governed are collectively successful. It is far better to be a unit of a successful, well-managed industry, than to wage a war of unstable competition with ignorant competitors.

It is the hope of your committee that on your return you will carefully and correctly fill out these questionnaires, as the first forward, educational step in the conduct of your business; and if enough of you will do this to enable us to get a reliable cross section, we can promise you information which will be of great value to you and to the industry in general.

The first questions will be on a very simple elementary basis. If the answers to these are forthcoming, your committee can assure you of a succeeding set which will be even more comprehensive and perhaps more interesting.

For five years now, your association has done its best to help you in the selling end of your business, and for reasons well known to all of us, the success has been far from satisfactory.

The first way to make money in the conduct of a business is to save it by cutting down unnecessary expense by increasing efficiency. We are now offering you the beginning of this method, and we hope it will be met with your unqualified approval.

In closing, we would like to again emphasize some important practices—so obvious that it should not be necessary to touch upon them.

a. The adherence to prices published in our respective price lists as they apply to quantities for warehouse shipment;

b. The abuse of deliberately shipping tons or less of regular sizes and weights from the mill at reduced prices, while carrying the same merchandise in the warehouse, since the so-called legitimate merchant differs from the broker only in so far as he does a *warehouse business;* and

c. The universal adoption of the suggested mill and warehouse trade customs as explained in detail by the pamphlets which will be distributed among you at an early date.

It is the earnest hope of your committee that as you more seriously consider these very vital points in the conduct of your business, you will recognize their importance and universally adopt them. (Applause)

VICE PRESIDENT GILLETT: Mr. McLaughlin mentioned some of those points at the Administrative Committee meeting at which twenty-five were present, and all twenty-five stated that they would be very glad indeed to exchange information along the lines he mentioned. If anybody else wishes to do so, they can let the Secretary know, and we will send them blanks also.

I received a moment ago a communication that reads as follows:

WHEREAS: There are two elements essential to the success and progress of the American paper industry, namely, the manufacturers and the merchants; and

WHEREAS: The paper merchants of the United States are organized through the National Paper Trade Association; and

WHEREAS: The National Paper Trade Association is now celebrating its silver anniversary, twenty-five years of organized service in the paper industry; be it therefore

RESOLVED: That the American Paper and Pulp Association, in convention assembled, at its fifty-first annual meeting, does hereby extend its congratulations to the National Paper Trade Association and best wishes for its continued success. (Applause)

Mr. Leslie, Chairman of the Efficiency Committee, presented a very complete report at the October meeting. It was not only a report but it was a demonstration. He had steel racks there and cartons and various charts, and so forth, largely on the subject of carton packing. A good deal of that material is being condensed or compiled in a report gotten out by the Central Carton Packing Committee which is now being printed by the American Paper and Pulp Association, and copies of that containing all the information relative to the investigations of carton packing and the developments of it, including cuts of the various operations, will be available to our members through our Secretary's office. Will Mr. Leslie make his report?

...Due to the fact that Mr. Leslie had a cold, the report was read by the Secretary. It appears on the following pages . . .

Report of Efficiency Committee

At our October meeting in Chicago, the Efficiency Committee endeavored to give you a survey of the subject of "carton packing," and there is little now to add to what was said then.

The final report of the general Carton Packing Committee should, however, be mentioned here, for the representatives of your Association were active on that Committee. Copies may be obtained upon application to E. H. Naylor, the Writing Paper Manufacturers Association.

One conspicuous piece of work on the part of a manufacturer has been announced since our last meeting, namely, the one-thousand-sheet carton of the American Writing Paper Company. To your Committee, this new method of packing, involving the use of cartons holding one thousand sheets (a number of them crated together in approximately 500-lb. units) offers some distinct advantages and other definite disadvantages.

It seems quite likely that the cartons, being shipped within a crate, will reach their destination in better shape than those shipped alone, and it is possible that the paper within those cartons may reach their destinations in a condition superior to that packed in a larger type of carton.

The one-thousand-sheet carton ranges double folio in gross weight from 35 lb. to 100 lbs. (2 in.-16 fol. to 2 in. 48) while the larger carton ranges from 105-140 lbs. The one-thousand-sheet carton is, therefore, a one man handling job. The larger cartons are a two man job. To us, it seems that the one-thousand-sheet carton offers too wide a range of weights (that is, from 35 lbs. to 100 lbs.) which introduces a serious difficulty if the carton quantity is to be used as a basis for pricing.

The one-thousand-sheet carton is not made of sufficiently heavy board to qualify under rules of Consolidated Classification for a freight shipment as a carton when weighing over 65 lbs. If shipped by freight, without other protection, the larger must be tied or banded. We understand that the paper within the carton is not wrapped in any way, but, instead, shows a marker every 250 sheets. This means that all ream orders, of which there are many, must be wrapped by the paper merchant, an added expense in both time and materials. The many advantages of the thousand sheet cartons are set forth in a circular describing it, which is available on request to the American Writing Paper Company.

Among the many subjects for study which have come to the attention of the Efficiency Committee of our Association, we have chosen one, on which we may only hope today to make a preliminary report in the expectation that it may lead ultimately, through the work of another Committee, to a final report of great value.

The problem is that of the sampling of printing papers to the printer, and incidentally for the merchant's office use. In other words, the problem of the sample cabinet.

That the subject continues to be of vital interest from year to year is evidenced by the long and thoughtful letters received by your Committee preparatory to this report.

Incidental to this subject, your Committee finds a need for a composite schedule of comparative weights among all grades of papers and commencing with 8½ x 11 or 11 x 17 size. It is proposed that the Committee prepare such a schedule for the convenience of our members.

We paper merchants have spent hundreds of thousands of dollars, and the manufacturers likewise, in sampling printing papers for the convenience of the printing industry. If our efforts are conspicuous for anything, it is for their lack of standardization.

A collection of sample cabinets made five years ago in a western territory showed no two cabinets alike in any respect. Uniformity of size was completely lacking, as was uniformity of color and finish. Some were built on the principle of the filing system; others were made up of bound or loose-leaf books. Filing systems accommodated booklets 6½ x 9½, 8½ x 11, and sizes between these. Bound or looseleaf books varied in sizes from 4 x 9 to 8½ x 11.

In the matter of original distribution, some houses distributed their sample cabinets widely, and without any apparent study; others, more carefully, and only after due consideration of each individual, prospective customer. When it came time for corrections, some houses with loose-leaf books corrected theirs in a thorough manner; others, half-heartedly and unsuccessfully. Houses with bound books seemed loath to discard the expensive volumes though the new ones might find more ready use.

Cabinets of the filing type lost their contents, piece by piece, and were not replenished.

What has been the result? The vast majority of printers have not been properly equipped with printing paper samples, nor has there been sufficient inducement to them to keep their samples in proper condition.

Were there some standardization in this field of our endeavor, your Committee feels that the great amount of time and money spent on sampling might be materially reduced with an expectancy not of diminished reutrns, but of increased returns.

Were our good printer customers able to establish a systematic filing system, in which might be kept all paper samples, they would gladly do so in preference to the pile of assorted cabinets which now decorate their offices.

Your committee has the temerity to present some general specifications for such a standardized paper sampling equipment. These specifications are offered mainly for the purpose of starting the argument.

First, let us visualize the trade to whom we propose to send our samples. In a certain territory, there are twenty-seven hundred printers, large and small, successful and unsuccessful. An analysis of this territory, carefully made, seven years ago and checked constantly and repeatedly since then, makes clear the fact that there are not to exceed one thousand printers in that territory doing a sufficient volume, with a sufficiently strong credit standing, to warrant an expenditure on the part of a paper house for samples of $30.00 or more. Let us assume that this local picture is fairly representative of the country at large. We must, then, eliminate from consideration from fifty to sixty-five per cent of those listed as printers whose business is small or credit standing unsatisfactory; and we must confine our study to the problems of the printer who may give his best paper house a minimum of $300,000 per year in business.

It seems quite likely to your Committee that thorough and careful study of the subject will reveal the most ideal size and type of sampling equipment to be 8½ x 11, vertical file, the type commonly used for correspondence files. There is much to recommend this size. It is a size approved and accepted by the National Association of Purchasing Agents for their files of catalogues, pamphlets and samples.

This type of equipment is readily available throughout the country and is in common use. The size lends itself to a variety of lay-outs for paper samples. Full 8½ x 11 sheets, plain or printed—11 x 17, folded to 8½ x 11, and a great variety of booklets based on the 8½ x 11 size may be filed in such a cabinet. In addition, bound or looseleaf books, size 8½ x 11, or 5½ x 8½, may be filed in such a cabinet.

This type of cabinet lends itself to the filing of dummies, 8½ x 11, and smaller, as well as miscellaneous printed specimens, kept for their suggestive value. Those of us acquainted with the American Writing and Strathmore Paper Company's unprinted sample files for the merchants have found them exceedingly satisfactory.

The Efficiency Committee is expected to direct its attention and efforts towards greater accomplishment at less cost; and we are sure you will agree that your Efficiency Committee has not overlooked this fact in presenting to you for careful study during 1928 the problem of standardizing and simplifying the wholesale paper merchants' sample cabinet for printers. We, therefore, move, Mr. Vice President, that our incoming Vice President in charge of the Fine Paper Division be instructed to appoint a special committee for the purpose of studying this subject and reporting thereon at our October meeting in Chicago.

Respectfully submitted,

CHARLES ADDOMS, LEON BECK,
B. P. BOND, A. W. LESLIE
I. W. CARPENTER,

VICE PRESIDENT GILLETT: That report is very constructive and contains a definite resolution which Mr. Leslie is offering. Does anybody care to second that motion?

...The motion was seconded by Mr. Brown....

VICE PRESIDENT GILLETT: The motion simply calls for the incoming Vice President to create a committee to investigate this subject.

...The question was put to a vote and carried unanimously....

VICE PRESIDENT GILLETT: Mr. Myers, will you make a report for the Clearing House Committee?

Report of Clearing House Committee

MR. R. E. MYERS: Mr. Chairman and Gentlemen: The work of the Clearing House Committee divides itself into two parts, one to analyze the differences in trade practices of the proprietory mills both as regards the merchant and as regards the suggested resale prices on those proprietory mill brands.

I had no idea that there would be such a difference in those trade practices. It may be of interest to you to know of the chief differences that show themselves forth in this analysis.

A harmonization of these practices in trying to get the mills to come together more and more into a harmonious whole is also part of the work of this committee, and on that I wish to report progress.

The most striking differences of these mill practices are as follows: First, the mixed carload price. One mill only is definitely on record as applying this. Second, the mixed ton price from mill. One mill only is definitely on record as applying this. Third, the broken case penalty. One mill only is definitely on record as making no sales less than two packages, two mills making a penalty for broken cases; other mills make no penalty for broken cases.

Fourth, broken packages. Two mills definitely on record will not break packages; two mills charge 25 per cent for broken packages; and one mill applies the less than one thousand sheet penalty or three to five cents up charge.

Fifth—this does not concern prices but concerns trade practices—on special sizes of book papers, from 2000 to 5000 pounds, two mills apply a 10 per cent up charge and two mills apply a 5 per cent up charge.

Sixth—and this is a new one—for less than ream price or half thousand sheet price, one book mill is now definitely on record as applying a 50 per cent markup over the ream or half thousand sheet price.

I thank you !(Applause)

VICE PRESIDENT GILLETT: It seems to me that that report discloses a lot of inconsistencies that more or less involve us. I would entertain a resolution to continue the activities and work of the Clearing House Committee in an effort to harmonize those differences as far as possible. I think they are quite important. Does anybody care to so move?

MR. CLEVELAND: I so move.

...The motion was seconded, was put to a vote, and carried...

VICE PRESIDENT GILLETT: The last report on the program is from Mr. R. S. Bull, who is pinch-hitting for Mr. George Ward, Mr. Ward being the chairman of the Postal Committee and out of town. Mr. Bull has very kindly taken over a lot of the work in connection with raising of funds for carrying on of this attempt to get these postal regulations adjusted, and Mr. Bull will make the report.

Report of Postal Committee

MR. R. S. BULL: Mr. Chairman and Gentlemen: The present postal bill known as the Moses Law has been in effect for not quite two years. Only one fiscal year, as the Post Office Department reckons it, has been completed. During that fiscal year, as Mr. Brown told you, you lost 800,000,000 pieces of third-class mail. You have seen the private postcard business entirely disappear. At present, you are all getting mail advertising American commodities printed in France and mailed in France. You are going to see a great many more pieces printed in Canada and mailed from England, but the big movement of third-class mail is going to be from this country to Canada because of the ease and facility with

which advertising plates can be shipped across the border and printed there with no delay in the time of mailing.

You can mail a piece of third-class matter weighing two ounces from Paris, London, Toronto, or Montreal to San Francisco or any other point in the United States for two cents. It costs a cent and a half under the present law, and under the proposed law now in the House of Representatives it will cost at least a cent and a half.

That half-cent doesn't sound like very much, but with mailers sending out editions of 200,000 or 300,000 pieces at a time, it is well worth saving, and they so reckon it.

A bill was introduced in the last Congress known as the McKellar Bill. It passed the House of Representatives and would have passed the Senate probably, having been reported favorably out of committee, if it had not been for the delay in all senatorial legislation due to the filibuster. The bill died in the Senate without ever coming to a vote. The McKellar bill provided for a return of one and a half cents for two ounces. It provided for a collect on delivery postcard and a return to a one-cent rate on a private mailing card.

The McKellar Bill has been reported out of the present Senate favorably. It has not been acted on by the Senate as a body, however, as legislation of this sort must originate in the House of Representatives.

Congressman Greist, who is Chairman of the House Postal Affairs Committee, introduced a bill which went through one reading in the House and went to Committee, reading almost word for word like the McKellar Bill.

Since the first reading of that bill, it has been amended so that ordinary third-class matter, instead of being mailable at two ounces for a cent is mailable at the present rate of one and a half cents for two ounces or at a bulk mailing rate, consisting of not less than twenty pounds in a mailing, at a rate of twelve cents a pound. This rate is perfectly satisfactory to the printers, and an amendment was suggested by a representative of the Typothetae who is a director of the National Council of Business Mail Users.

The twelve cents a pound rate is just as unsatisfactory from our point of view as the present law. It will allow the mailing of circular letters with a return postcard, or something of that sort, at a cent apiece if there are not more than twelve pieces to the pound at twelve cents a pound; the pieces can obviously be mailed at a cent apiece. However, in order to get the rate of a cent apiece, the piece cannot weigh more than one and one-third ounces or twelve pieces will weigh more than a pound, and the rate will go up to a cent and a half apiece.

That means that a great many booklets, broadsides, light weight catalogs, and bulk mailings will have to be so big instead of so big (indicating). It must weigh less than one and a third ounces to get the cheap rate under the proposed Greist bill. That will amount to a considerable further reduction in tonnage if the present proposed bill becomes enacted into law.

The second objection to the Greist bill is the fact that it allows the Postmaster General to set up regulations for the convenience of the Post Office Department in handling these bulk mailings. The experience of other bulk mailers, such as the second-class people, with the Postal Department would indicate that in all probability the Postmaster General will specify that in order to take advantage of the bulk mailing rate, your mail must be sorted by city and street address or by rural free delivery route, and any of you who are familiar with the ordinary operation of a mailing list know that it will cost so much more to sort your mail that way, that nobody will take advantage of the bulk mailing rate and all mail will go out under the present rate of a cent and a half.

The Senate will presumably pass a bill returning the rate to one cent for two ounces. The lobby set up and maintained by the National Council of Business Mail Users has been assured by enough Senators that they were in sympathy with our wants to get the thing through. There are comparatively few Senators that have to be reached, and the Senate is always particularly anxious to please business in the United States. They agree with us that it shouldn't be cheaper to mail from Canada to the United States than it is to mail within the United States.

There are, however, 450 Congressmen to reach. The question of a bulk mailing rate doesn't appeal to most Congressmen as a matter of any great importance, and most Congressmen who have been approached in this matter say, "Well, aren't you fellows satisfied with this new bulk mailing rate? You ought to be perfectly satisfied with that. We are giving you a lower rate and getting it back to a cent apiece." It is a pretty hard thing to teach a Congressman exactly what our objections really are.

The money that we have asked you for has been used and is being used to maintain a lobby in Washington. That is all there is to it. You can call it by some more euphonious name, but the money must be used to reach 450 Congressmen and tell them that a bulk rate of twelve cents a pound is not satisfactory to us, that sorting by city and street and rural free delivery is not satisfactory to us. We have got to tell every Congressman that we can possibly reach that we want to be able to mail within the United States just as cheaply as Canadians can mail to points within the United States, or just as cheaply as American businessmen can go over to Canada and buy paper and printing and mail it to the United States.

Your Committee has been able to raise, with considerable effort, $6,321 since January 1, 1927. This may seem like a very considerable amount, but it has got to be the principal source of income from now on in this fight. The printers are not interested from this point on as we are. It is the paper manufacturers and the paper dealers who are interested in preventing postal regulations which will further reduce the weight of mailing pieces.

If there are any of you who feel that you can give any more, can help out any further in this matter, you ought to get your checks in very quickly, because it is important to see as many of these Congressmen as possible, and the only way they can be seen is by hiring paid representatives to go and talk to them. (Applause.)

The meeting adjourned at 4:20 o'clock.

MEETING OF THE WRAPPING PAPER DIVISION

The Wrapping Paper Division of the National Paper Trade Association of the United States convened at ten o'clock, in the Waldorf-Astoria, New York City, on Wednesday morning, February 22, 1928, Vice President Harry W. Mathewson presiding.

VICE PRESIDENT MATHEWSON: We shall now hear the Report of the Executive Committee read by Mr. Schoenbucher.

Report of Executive Committee

SECRETARY SCHOENBUCHER: The Executive Committee discussed some of the problems of the trade at considerable length but took no action or made no recommendations which require presentation at this session.

At the last meeting of your Executive Committee which was held at Chicago in October, 1927, your Secretary stressed the need for more definite ways and means of meeting and solving the problems which arise in different branches of the industry, and in that connection recommended that special standing committees be created to meet and confer with appropriate committees of the various unrelated branches of the paper manufacturing industry.

Your vice president was empowered in October to create such committees when the time seemed opportune to do so.

Your Executive Committee (and other special committeemen) believe that such regular committees should now be created and in

pursuance of the resolution passed at Chicago last October, your Vice President will proceed with appropriate action.

On Monday evening, the Executive Committee had as guests, at the Conference Dinner, eleven manufacturers from different branches of the industry. The prevailing note of the conference was one of good-will.

A few words will suffice to cover the principal topics which were discussed at some length.

One of the manufacturers present emphasized the need of the mill having full information as to the use to which special made papers were to be put. He pointed out that if the merchant will place confidence in his mill connection and impart all necessary information for intelligent procedure in manufacturing, losses, misunderstandings and dissatisfaction will be largely, if not entirely, eliminated, and service in the making and delivering of such orders will be greatly expedited to he benefit of all parties in the transaction.

In connection with the Kraft situation, one manufacturer pointed out that any serious overproduction of this product can only come about by mills ordinarily producing other products putting their facilities into the production of kraft. He expressed the opinion and also quoted certain figures with the intention of making clear that it was such a shift on the part of manufacturers during last year which caused the lowering of kraft prices toward the close of 1927.

One manufacturer touched upon the social obligations forced by the manufacturers. This discussion was deeply impressive to those present and indicates a growing recognition by management of its responsibility toward labor. This manufacturer described the little communities surrounding most paper mills, situated invariably at points far distant from great labor markets. He emphasized very impressively that the responsibility for the prosperity and welfare of these isolated communities rested entirely upon the managements of the industry at large and that under a condition of scant net earnings or no net earnings, enlightened management owes a heavy obligation to the workers to find ways and means for improving such stress by means other than the usual one of wage reductions.

We stated that recourse to the latter means was a serious indictment of the capacity of the management to conduct the industry along sound, constructive lines.

This same manufacturer also stressed to some length, the need for prosperity among manufacturers in order to provide the funds for research and technical experimentation, because such scientific activities are vitally necessary if the industry is to improve the product, lower its costs and conserve natural resources.

It would have done every man in this large meeting here assembled, good to have heard that discussion. It was carried on, incidentally, by the youngest man at the conference dinner.

One of the representatives of your own group, emphasized the fact that all manufacturers should ascertain the true facts regarding the merchant's cost of doing business before suggesting resale selling prices, in order to be sure that the margins provided by that policy of selling, be adequate to cover expenses and show a fair profit to the merchant.

The conference dinner adjourned at about eleven-thirty p.m.

. . . It was regularly moved, seconded and carried that the report of the Executive Secretary be approved and adopted . . .

Report of Vice President Mathewson

VICE PRESIDENT MATHEWSON: It has been customary for the Vice President to make a report. It will be very brief.

Thinking over the activities of the year just past, I am certain our Association as a whole has made considerable progress. I am sure our Division has kept pace with this general progress. We have all given our best thought and effort to that end.

Our Division has had personal contact with practically all of the local associations. I will read over some of the associations that we have visited: The Missouri Valley, the Empire State, New England, Philadelphia Association, Baltimore and Southern, the South Western, Virginia and Carolina, Middle States, Wisconsin and New York Association, together with an extensive trip on the Pacific Coast early in the spring, at which our Secretary visited with all the different merchants in that territory, and was at the meeting in Del Monico in May.

Your Vice President and Secretary visited the Iowa Association along in last October. We invited the President of that Association to come to our October meeting. He was so well pleased with that meeting that we have their application to rejoin the National Association, and we will try to keep this good work up. I am sure that it will bear fruit.

We all look back to our Chicago meeting last October with much interest, and fully recognize the complete and instructive program presented at that meeting. We owe our gratitude to the Committees and especially to the Survey Committee members for their untiring work resulting in the presentation of facts of so much interest to all of us. Their work is still going on as will be evidenced later on in our program this morning.

Our Committees are all working on their various problems and I know they want your advice and recommendation. Gentlemen, we have some very active men on our committees. We probably don't fully appreciate the time that has been put in by the different committees, particularly the Chairmen, and I feel that they are looking out for our interests and doing the very best they can to build up this association, and I speak in their behalf when I tell you that I wish that you all take your troubles to them. I know they will help you.

We have been so successful with the Committees that we now have them in operation, and I feel it would be to your advantage an association to extend our field in this way.

I feel that we can have a Bag Committee and a Kraft Committee to try to better our conditions along those particular lines.

I wish to express my appreciation for their support and effort. I want the full membership to know how deeply I feel the responsibility of my office and promise you that I will use every effort to make our Division stronger and better.

On Monday night, we held a conference dinner with the manufacturers, and I personally, gentlemen, have never been so sold on those conference dinners, but I realized after Monday night that we were accomplishing something. The only thing I regret is that it wasn't possible to have such a dinner which the whole membership could attend, because you know when we try to carry back to our membership what we get and hear in these meetings, we don't give you the same picture that we get ourselves. The sincerity expressed there by the manufacturers and their concern over our problems and their wishes to help us were very apparent, and I hope this can be extended to bring results that we will all benefit by.

I am confident that the future holds great prospects and marked encouragement. I pledge you my best efforts for the year 1928, and I hope that we will carry on our work to such an extent that you are all going to see the benefits and receive some of them.

Gentlemen, I hope that I have covered this matter so that you realize how I feel, that I want the Wrapping Paper Division of the National Paper Trade Association to be progressive, aggressive, and accomplish things. Gentlemen, I thank you. (Applause).

We will now have the report of the Trade Customs Committee by Mr. Corning.

A. J. CORNING: Gentlemen: I seem to be rich in chairmanships. I am reporting for the Trade Customs Committee as well as the Tissue Committee, and I shall make my report very brief and combine the two.

Report of Trade Customs Committee

Trade Customs, as you no doubt know, was a very historic committee. Last year, they operated and worked night and day practically all year, but so far as relations with the other side of the industry were concerned, there was nothing doing.

Briefly, that is the report of the Trade Customs Committee.

Report of Tissue Committee

The Tissue Committee is reporting progress, nothing extremely new. As a matter of fact, it seems as though the annual meeting of the Tissue Conference Committee usually comes in Chicago. Last October, you gentlemen no doubt know just what transpired. The committee went on in conference with the manufacturers of tissue, and a friendly relationship has been brought about with the tissue manufacturers, and it is very easy to say that almost anything for the benefit of the tissue industry can be accomplished by those conference committees.

Through the help of the Department of Commerce, Mr. Hoover's Department, the Bureau of Simplified Practice, the tissue industry has been simplified, and it has meant less expense of merchandising and greater efficiency in manufacture. So, aside from those few remarks, I will close by saying that the activity of that committee recently you perhaps have been in contact with through the mails, and the placard that was gotten out by Mr. Schoenbucher's office with the idea of giving the official label which was adopted by the joint committees and with the help of Mr. Hoover's Department more publicity.

So that it now remains for the members of this division as well as the Fine Paper houses who are handling tissue papers to cooperate fully with the work that has been done, so that greater gains can be made and better strides made in the tissue industry.

I just would like to say one other thing that the Vice President has mentioned, and that is that informally it was spoken of yesterday that there should be other committees that could act and cooperate more closely with the various divisions of the manufacturers of wrapping papers, such as a separate Kraft Committee and a Wax Committee and a Bag Committee. It is only through that individual contact with the manufacturers, meeting with them, that good can come of conference work, I mean trade relations work. A general Trade Relations Committee in the past hasn't been very successful; because of the diversified interests involved, you can't get all of the manufacturers together for any real good purpose, but you can sit down with a dozen or more in a room and talk over the problems peculiarly relative to that particular branch. Thank you! (Applause).

VICE PRESIDENT MATHEWSON: Gentlemen, you have heard the reports of the Trade Customs and of the Tissue Committee. What is your pleasure!

. . . Upon motion regularly made and seconded, it was voted that the reports be accepted . . .

VICE PRESIDENT MATHEWSON: We will have the report of the Gummed Tape Committee by Mr. L. J. Marshall.

Report of Gummed Tape Committee

MR. L. J. MARSHALL: Mr. Chairman and Members of the National Paper Trade Association: I have two reports to make, one the Joint Conference with Manufacturers on the item of Gummed Tape; the other one of the N. P. T. A. Gummed Tape Committee.

. . . The reports as read appear on the following pages . . .

Report of Joint Conference on Gummed Tape

New York City, February 20, 1928.

The Joint Conference between the Manufacturers Gummed Tape Committee and the N. P. T. A. Gummed Tape Committee was held Monday, February 20, at five o'clock p. m.

Those present were:

Representing Manufacturers: T. R. Gautier, Nashua Gummed and Coated Paper Company; Edward Herrlinger, Gummed Products Company; W. K. Gerbrick, Central Paper Company; Irving McHenry, Mid States Gummed Paper Company.

Representing Merchants: H. L. Zellerbach, Zellerbach Paper Company; W. E. Ebbets, Coy, Disbrow & Co., Jules Wolbrette, Southern Paper Company; J. A. Carpenter, Kansas City Paper House; Ernest Hoel, Carpenter Paper Company; L. J. Marshall (Chairman), Marshall Paper Company.

A general review of the activities of this joint Committee was made and a number of topics relative to the industry were discussed pro and con. The survey informed us that about 75 per cent of gummed tape manufacturers are in the Manufacturers Association and in order to bring about a more stabilized condition in the industry, it will require the cooperation of the merchants.

The Committee has observed that some merchants have been lax, in that they do not inform their manufacturing connections about conditions in their territory. This condition can be improved upon to the benefit of these merchants, by taking up such matters through the proper channels and thus lessen their troubles, which in many cases are the result of misunderstandings.

The joint Committee has and is now advocating a scientific plan of merchandising and they feel that in order for the item in question to be a profitable one, this plan must be taken into consideration to obtain proper results. While this plan is not a panacea or cure for all complaints, it certainly will have a tendency to keep the gummed tape business of the merchants in a healthy condition.

There is an effort being made to stabilize the printing of gummed tape, with the hope that in due time this will be accomplished, but there are so many angles with which to reckon, that it is going to be quite a problem to solve.

The educational booklets that were promised by the Manufacturers Association are now on the press, and we have a few copies here to show. In the near future, these booklets will be ready for distribution by the Manufacturers belonging to the Association. These booklets should be carefully read by your salesmen and contents thoroughly digested, for they contain many valuable points to be used in furthering the sale and also in the proper application of gummed tape.

The Manufacturers Committee is anxious to have another meeting with the N. P. T. A. Committee at the fall meeting in Chicago and your Committee recommends that such meeting be arranged.

The meeting was then adjourned.

Respectfully submitted,
(Signed) LOU J. MARSHALL, Chairman.

Meeting of the N. P. T. A. Committee on Gummed Tape

New York, February 21, 1928.

The Committee met at ten-thirty a.m. and was in session until twelve-thirty p.m.

Those present were: R. Roesch, Union Paper and Twine Company, Cleveland, Ohio; W. E. Ebbetts, Coy, Disbrow Company, New York; Harvey E. Platt, Smyth Paper Company, Philadelphia, Pa.; T. H. B. Smyth, Smyth Paper Company, Philadelphia, Pa.; Alfred Corning, Hubbs & Corning Company, Baltimore, Md.; H. W. Mathewson, (V. P. Wrapping Paper Division), The Paper Supply Company, Minneapolis, Minn.; N. A. Schoenbucher, (Secretary, Wrapping Paper Division); Jules Wolbrette, (Act. Secretary), Southern Paper Company, New Orleans, La.; L. J. Marshall, (Chairman), Marshall Paper Company, Appleton, Wis.

The report of the October, 1927, meeting of this Committee and the report of the conference dinner in Chicago were read and approved. A report was made of the conference between our Committee and that of the Manufacturers, and the confused situation which existed in former years was shown to be getting very much clarified, and more satisfactory to the merchants.

A general discussion developed about the efforts of the Committee and satisfactory results were reported. The Committee suggests that your complaints be taken up with your Committee and so let them enlighten you upon the subjects in question. Don't keep your troubles "under your hat" and don't make the mistake of seeking relief from the wrong source. Your Committee stands ready to help solve your problems in the merchandising of gummed tape.

Some of the reports you receive can be taken with grain of salt. It was suggested that a Gummed Tape Committee be continued.

A child learns first to creep, then to walk, and then to run. This Committee, we believe, has passed the "creeping" stage; is now

walking and we hope that in the not far distant future, will be running along in a businesslike way.

Respectfully submitted,

(Signed) LOU J. MARSHALL, Chairman.

VICE PRESIDENT MATHEWSON: What is your pleasure?

MR. CARPENTER: I move it be accepted and placed on file.

The motion was seconded.

VICE PRESIDENT MATHEWSON: When you make this report and second it, it is made with the idea that the Committee be continued, and with that understanding, I call for a vote.

The question was put to a vote and carried.

VICE PRESIDENT MATHEWSON: We will have the report of the Twine Committee, Mr. Shaw, Chairman.

Report of Twine Committee

C. A. SHAW: Mr. Vice President and Members of the National Paper Trade Association.

The Twine Committee in the past year have worked on two important problems; the protection of the merchant's warehouse stocks and elimination of the small order shipped direct by the manufacturer.

Your Committee after continually pounding on this subject were at last successful in getting the manufacturers to investigate this condition in their own mills and the result was astounding. I haven't all the figures at my command but one mill whose name I will not mention gave me the following figures: 65 per cent of their orders were less than a thousand pounds, and 45 per cent of their orders were less than 500 pounds and it is probably a fact that on every order under 500 pounds there was a loss.

Both the Hard Fiber and Soft Fiber Association have come to the conclusion that the most economical method of distributing their product is through the merchant and they are now working on a plan by which the legitimate merchant will receive protection for his warehouse stock and which will make this commodity more profitable for the merchants to handle.

The latest move in Association work has been made by the Spool Tape manufacturers. In the past these manufacturers have given absolutely no protection to the merchant. I have just been informed that they are organized under the name of the Emerald Sales Company and that they are positively going to protect the merchant that stocks Spool Tapes.

As I look at the cordage and twine industry as a merchant today I believe the relations between the manufacturer and the merchant are much closer than they have ever been before. I hope that the Twine Committee and its Chairman for the coming year will receive the same cooperation that my Committee has received. I want to publicly thank the officers of this Association and members of my Committee for the fine support they have given me in this work.

Respectfully submitted,

CHARLES A. SHAW,

Chairman Twine Committee.

MR. WIGGINS: I move that the report be accepted and the committee continued.

...The motion was seconded and carried....

VICE PRESIDENT MATHEWSON: Mr. Goodyear, of the Bogalusa Paper Co., has been so kind as to be willing to address us this morning. He has an important meeting at eleven o'clock, and we are going to change the program around a little bit.

Mr. Goodyear made a fine address which was greatly appreciated.

VICE PRESIDENT MATHEWSON: We will now have the report of the Survey Committee, Mr. Edward Hall.

Report of Survey Committee

E. A. HALL, JR.: Mr. President, Members of the National Paper Trade Association, the report of the Survey Committee will necessarily be brief. It consists merely of a statement that the Committee has earnestly endeavored to give you interesting and accurate programs, to which we wish to add that we have sincerely tried to spread the gospel of good business practice as we have learned it at the meetings of the National Paper Trade Association.

The other sections of the report consist chiefly of recommendations on the Wrapping Paper Division as to what the procedure of the Survey Committee should be in the future, in our opinion.

We recommend, Mr. President, that the Survey Committee of the future present new material pertaining to other phases of the operation of a merchandising business. We feel that the subject of net profit control which is the most important subject that has come to my attention at least since I have been a member of the Association, has just been about exhausted as far as new possibilities are concerned. We feel that it is unfair to the percentage of the members who have adopted net profit control to subject them to the story that I am told has been told for eleven years.

We recommend that the net profit control work be continued because of its extreme importance, but in a different manner. We recommend that at future meetings, a two-day forum be established, which may be attended by all or as many members who are interested in the subject, at which there will be a definite program carried out in the a b c's of net profit control, these meetings to be conducted by a member of the Survey Committee thoroughly competent to lead the discussion and answer all questions.

We further recommend that a pamphlet containing all of the valuable information on this subject be published for general distribution, particularly to the new members. We have not in mind the broadcasting of this pamphlet, but that it be available for non-members of the National Paper Trade Association in other markets, for the reason that there is nothing that will help raise the tone of a market as much as the spreading of this information, recognizing that the possibilities of the educational value of such work is inestimable.

Realizing further, the educational value of investigations, we recommend research work to be done by the Survey Committee along the following lines: First, the proper selection and development of salesmen.

Of the many intricate problems that confronts the paper merchant, probably the selection and development of salesmen is one of the most puzzling. We believe that the Survey Committee can get together information that will be invaluable on this subject.

Second, investigation into the economical control of all operating expenses.

Third, the investigation of how far and in what manner the individual may proceed in marking his selling price up over actual cost.

We believe, gentlemen, that if our recommendations are accepted, that the Survey Committee can continue to do an invaluable work for the members of the National Paper Trade Association. As I look at you, I know that you are all good business men, but you know and I know that everyone in the paper business is not a good business man, and if we can get these apparently simple things across to them, for instance, as to how to arrive at a selling price, our business will be a much better business.

Mr. President, I find that concludes the report of the Survey Committee. (Applause.)

Survey Committee Continued

VICE PRESIDENT MATHEWSON: Gentlemen, you have heard the report of the Survey Committee. The motion will be made that you endorse the recommendations of this committee and that this committee be continued.

MEMBER: And that Mr. Hall continue as its Chairman.

MR. HALL: I appreciate the compliment that you pay me, but it will be impossible for me to continue as Chairman next year.

VICE PRESIDENT MATHEWSON: Gentlemen, you have heard Mr. Hall. Mr. Hall has given a lot of good work to this Committee, and has received a great many compliments on the work, but that he wants to be released is no more than fair. Don't forget that the Vice President in charge tried his best to persuade him to continue. However, we are going to continue the Survey Committee.

We are going to continue to do the good work, and your President is very sincere in continuing this work. We are going to have another Chairman—I won't say that he will be better, better than Mr. Hall, but he will be equally as good.

MR. HALL: I have picked an able successor.

MR. COBB: I move that Mr. Hall stay on the committee.

MR. HALL: I will.

MR. PLATT: I want to state that one of the most clear-cut reports we have had is this report of the Survey Committee. I don't like to see this opportunity go by without a sincere vote of thanks, not a merely formal compliment. I think we owe a great deal to Mr. Hall for the work he has done on this Committee. I don't know any other way to put it than by a formal vote of thanks.

MR. HALL: There is nothing that gives me greater pleasure than to present the next speaker to you, whom we all love, respect and admire, not because of what he says, but because of what he actually does. I therefore take a great deal of pleasure in presenting Arthur Blackman, who will talk on the subject of the "Three Steps to Profitable Prosperity." Mr. Blackman.

Mr. Blackman's Paper

Mr. Blackman's interesting address was listened to with close attention throughout and was well applauded. Mr. Blackman's address will be printed later.

MR. HALL: Gentlemen, nothing could more graphically prove the effort that Survey Committees of the past and of the present have made to sell the idea of proper cost accounting and net profit control to you. It is because of the fact that so many have been sold on net profit control that we gave the task of making a final play, presenting a final picture, to Mr. Blackman. One of Mr. Blackman's disciples will talk to you next. He is a young man who has worked very hard to put his own house in order, and he has worked tirelessly to put his own market in order.

C. A. Spaulding Speaks

It gives me great pleasure, gentlemen, to present the next speaker, who is C. A. Spaulding, of the Carpenter Paper Company, of Iowa.

C. A. Spaulding, of the Carpenter Paper Company, Des Moines, then presented a fine paper.

MR. HALL: Ted, as usual, you made a ten strike.

Gentlemen, you have been awfully kind to us, and we have an outside speaker we are very anxious to have you hear. We will continue the program of the Survey Committee which will probably take about twenty minutes when the speaker has concluded.

So at this time I am going to turn the meeting back to Mr. Mathewson.

VICE PRESIDENT MATHEWSON: Gentlemen, we are going to have a speaker that Mr. Schoenbucher knows, knows of his activities, and Mr. Schoenbucher will introduce him.

Address by C. R. Stevenson

SECRETARY SCHOENBUCHER: The next speaker, C. R. Stevenson, is going to speak on a subject which he has entitled "The Economic Effect of Taking Business at or Below Normal Cost."

Mr. Stevenson's address was greatly appreciated.

VICE PRESIDENT MATHEWSON: Gentlemen, we have had one of the most wonderful talks we have listened to for quite some time, and I don't want you to go out until we have given this gentleman a vote of thanks. Let us all rise.

...Everybody arose and applauded....

MR. HALL: Gentlemen, in continuing with the program of the Survey Committee, I guarantee that you will be out of here in twenty minutes, if you elect to stay. If you choose to leave, please feel at perfect liberty to do so.

We have one more formal speaker—Charles Shaw, of Boston, who has applied Net Profit Control to his business. I take a great deal of pleasure in presenting Mr. Shaw. (Applause.)

Mr. Shaw spoke briefly.

MR. HALL: Gentlemen, no program of the Survey Committee would be complete without hearing a few words from Mr. Wolbrette, whom you all know and like and admire. Mr. Wolbrette, will you say a few words?

Mr. Wolbrette's Remarks

MR. WOLBRETTE: Mr. Mathewson and Gentlemen: All that I can say is that this is a sort of a swan song of the Survey Committee before the general body, and they didn't feel that it would be quite complete unless you had a sort of Greek chorus, and I have been called upon to be that chorus. I have jotted down a few notes. My talk is quite extemporaneous you will see, with the paper in front of me, and I want to say at this time that no thanks that you could extend to Mr. Hall would be adequate for the efforts that he has given to this Committee, and the same holds absolutely true of those of Mr. Blackman. Mr. Blackman has been for many years preaching untiringly regarding the net profit control, and you have heard today extracts of the address he delivered in this room eleven years ago, which tend to show that prohibition was not in force at that time. His extracts were full of ginger. Had there been prohibition eleven years ago you would have been taking Jamaica ginger extract for want of better, but at any rate it has had its effect and Mr. Blackman may feel quite satisfied and content that his efforts have not been unrewarded. Many have adopted the net profit control idea and the leaven is working.

Net profit control is possibly a misnomer, as Mr. Blackman pointed out in Chicago. Its real name might have been "Actual Cost Finding," which is what net profit control really means. There is no control to your profit when you know your cost. It is merely a question of what your profit should be.

Many merchants have viewed with askance the efforts of the Survey Committee in urging that this system be instituted in their businesses. They could not quite grasp the fact that you cannot remedy your own situation without remedying that of your competitors. You have to get them in unison with your efforts if you wish to better your own condition.

We have been preaching this so long that it is quite a good deal similar to prating about the virtues. If you continually hear them dinned into your ears they become boresome. And the Committee has felt that it is time now that those who wish to learn the facts about this may do so without having the general body hear it, if they don't wish to.

The gentleman who just spoke mentioned that it was a very laudable effort to obtain profit in your business and put it on a good basis, and that is quite true. The Government is encouraging it, and encouraging it for very many reasons. If you have noticed, there has been a great deal of pressure brought to bear on Congress by both President Coolidge and Secretary Mellon that the income tax cut be not made as great as has been suggested. The thing is they are trying to encourage us and every one who earns money in the United States to make more, so that it will be possible to give an increased cut in the percentage of taxes collected, income taxes. So it is quite a patriotic thing if you earn money and quite unpatriotic if you don't earn any.

The attempt of the Survey Committee might have been looked on with askance by many people, but it is an ideal that we have been striving for and even if we never attain it at least we will have had the satisfaction of having aimed for something higher and better. I believe that our efforts have been rewarded, and I think that in future years you will have every reason to thank those who have inaugurated it. Don't consider that I have had anything to do with the inauguration. I have been a disciple and I am merely spreading the gospel.

MR. HALL: I want to at this time thank the National Paper Trade Association for the opportunity that it gave me to learn

by serving. I want to thank the members of my Committee for the excellent work that they have done, and it gives me great pleasure, gentlemen, to present to you the Chairman of the Survey Committee who will serve you next year. Roger Wallington: (Applause)

Mr. Wallington Speaks

ROGER WALLINGTON: Mr. Hall, Mr. Mathewson, and Gentlemen of the Association: I am a little bit embarrassed.

I should like to repeat an old warning that used to be given everyone when they came in from the wilds of the West and the up-state sections to the big city to beware of pleasant-looking confidence men. Yesterday when "Ed" Hall approached me with a smile and said, "Let's go over to Mr. Mathewson's rooms," I followed him, thinking to myself it was simply another instance of well-known western hospitality. (Laughter) And when Cliff Mallalieu showed up in the offing with a smile, I was sure of it. What was my horror, after the doors were closed so no one could hear my screams, to find that they wanted me to attempt the what I think is an impossible job of keeping the work of the Survey Committee up to the importance that it has reached under Mr. Mallalieu, Arthur Blackman, and "Ed" Hall! But I guess by this time the doctrine of net profit control has been spread around and enough members of the Association have adopted it and know about it and believe in it so that perhaps with a good deal less expert steering the work can go on somewhat along the lines that it has in the past.

Under "Ed" Hall, I think that the members of the Association will agree with me a great deal has been accomplished. Mr. Corning said that his Trade Relations Committee worked day and night during the last year. Mr. Hall's Committee, as far as I was able to observe, did better than that: they worked practically all night, even during conventions, surveying the local situation, and I know that "Ed" Hall has collected a lot of very interesting statistics which he hasn't presented, such as proof that 85.3 per cent of the night clubs of New York stay open until four o'clock. (Laughter) Also that the per order charge all over the city is practically the same—they call it a "cover charge" down here, but it is the same thing.

A friend of mine at home one time said that he thought (he had been wading through the National, and Better Business and a half dozen other periodicals to get up some kind of a speech) if all these fellows who get up figures and statistics were placed side by side it would be a good thing—and I think perhaps he was right. But I hope that there are enough men in the Association now who are thoroughly interested in accurate figures so that they can eventually be placed end to end and form a chain clear across the country, because we have a problem of distribution, and as Mr. Stevenson said, this Association has come nearer to solving the method of overcoming all the difficulties than any other association of its size and importance, and with the help and cooperation of different members in different parts of the country in various sub-organizations, I hope we can accomplish some more constructive work during the next year. (Applause)

VICE PRESIDENT MATHEWSON: Gentlemen, I don't think it would be proper to close this meeting without first having a few words from Mr. Schoenbucher who has helped us carry on this work. Mr. Schoenbucher! (Applause)

Mr. Schoenbucher's Remarks

N. A. SCHOENBUCHER: I appreciate being called on, Mr. Chairman, even though it is ten minutes to one and all the members are itching to get out of here.

It is my observation that the members of the Association have about as many different ideas concerning what net profit control is as there are members in the Association and enough has been said on the subject and printed on it to cover perhaps every angle of its interpretation, and it seems to me that progress from this point on will depend entirely upon the individual effort of each member to put forth every effort to understand the plan thoroughly, if he is at all interested in making his business and the paper business a better business.

The one feature in net profit control which is new and fundamentally sound and which distinguishes it from plans of arriving at results in the jobbing business is the cost factor. The percentage method of arriving at results in a wholesale business has been exploded during the last three or four years within this Association, and so clearly so emphatically so that one wonders why the percentage method still prevails in the mind of so many men as being a sound method for arriving at results.

The biggest problems that you men have as distributors and the biggest problem which all wholesalers have is wasteful buying on the part of the consuming public. It was wasteful buying on the part of the consuming public and on the part of the independent retailer which gave the chain stores their early start and which has resulted in the picture you see today in other lines of wholesaling, and the one thing which the cost factor has clearly proved can be done is that by a proper reckoning of the value of a customer's business and the value of a territory and the value of a salesman's efforts the proper effort can be put forth to change the customer's buying habits to a point where all or a large part of this wasteful buying is obviated. You have heard in past meetings of houses who have adopted the plan and who have reduced the number of their orders very materially.

There was only one thing that did that, and nothing else, and that is the cost factor. I won't detain you any longer. I can only emphasize again that I know, not only from observation but from the standpoint of pure reason, before net profit control was used by anybody, if you will read the last paragraph on Page 7 which read to the effect that the cost factor would produce results in your business. It was pure theory at that time. The cost factor has produced those actual results in the case of every house which has adopted the plan. Thank you!(Applause)

VICE PRESIDENT MATHEWSON: I don't think this meeting would be complete without a vote of thanks to the father of net profit control, Mr. Blackman.

The audience arose and applauded.

MR. BLACKMAN: Mr. Schoenbucher comes in on that vote just as much as I do, sir. (Applause)

The meeting adjourned at one o'clock.

GENERAL MEETING OF THE ASSOCIATION

The General Meeting of the National Paper Trade Association of the United States convened at two-thirty o'clock, in the Waldorf-Astoria, New York City, on Wednesday afternoon, February 22, 1928, President J. C. Mallalieu presiding.

PRESIDENT MALLALIEU: Gentlemen, the meeting will kindly come to order. We have changed the routine a little this year on account of circumstances. First will be the President's Report.

President's Report

Twenty-five years ago next December this Association was formed and it seems appropriate to embody in the records of this Annual Meeting a few of the details concerning the foundation of an organization which has steadily grown and prospered for the period of a quarter of a century.

On invitation of the Paper Association of New York City, the organization meeting of the National Paper Trade Association was held in the Dunn Building, 290 Broadway, New York, December 15, 1903. The following were present:

C. F. Mather Smith, E. U. Kimbark, representing the Western Paper Dealers Association.

O. A. Miller, John Church, and A. F. Peck, representing the Central States Paper Dealers Association.

Robert Stevens, A. J. Corning, Jr., and Gordon L. Reese, representing the Baltimore Paper Trade Association.

W. F. McQuillen, E. P. Lindsay and J. E. A. Hussey, representing the Boston Paper Trade Association.

W. D. May, Thomas Barret, C. W. Ballard, C. F. Hubbs, Hazard Lesher, W. E. Ebbets, and J. E. Linde, representing the Paper Association of New York City.

The organization committee elected at this meeting consisted of E. U. Kimbark, A. F. Peck, W. F. McQuillen, Gordon F. Reese and J. E. Linde. The following officers were elected:

President, O. A. Miller; Vice President, W. F. McQuillen; Secretary, J. E. Linde; Treasurer, Gordon L. Reese.

The first annual meeting was held at the Waldorf-Astoria Hotel, February 9, 1904, and was attended by delegates from 5 local associations as follows:

Paper Association of New York City. Western Paper Dealers Association, Central States Paper Dealers Association, Northwestern Paper Dealers Association, Boston Paper Jobbers Association. Robert Johnston, Norfolk, Virginia, was present as a representative of a proposed organization of Southern dealers.

The records show that the then membership of the locals represented as above was as follows:

Central States Paper Dealers Association	28
Western Paper Dealers Association	37
Baltimore Paper Trade Association	8
Northwestern Paper Dealers Association	9
Boston Paper Jobbers Association (membership not given)	
Paper Association of New York City	34
	116

For the Central States the delegates to the first convention were L. F. Smith and C. P. Lesh, Alternates W. C. Gillett and W. M. Richards.

The delegate of the Western Paper Dealers Association was George Moser.

The delegates of the Boston Association were F S. Arnold and J. G. Swift.

The Baltimore Delegates were O. F. H. Warner and B. F. Bond.

The Northwestern delegates were John F. Leslie and F. L. McClellan.

New York delegates were W. E. Ebbets and Fritz Lindenmeyr.

The proceedings of this first convention included the adpotion of the constitution and bylaws.

On the same day, February 9, 1904, was held the first conference with the manufacturers of the American Paper and Pulp Association who were then, as now, meeting at the Waldorf at the same time.

Our membership now is comprised of fifteen local associations, the individual memberships in which total 388. The growth in membership reflected in these figures is not as significant, of course, as the increase in the spirit of friendliness which has been developed among the paper merchants of this country as the result of the efforts which the Association has made from time to time to build up a spirit of team play in this most important industry.

The year which has elapsed since the last general meeting of this Association held on February 23, 1927, will prove to be one of the most conspicuous in the history of the Association ir respect to the progress which has been made by your Directors in formulating plans for the functioning of our Association.

You will recall that President Miller stated in his annual report a year ago that a special committee, composed of the President, the two Vice Presidents, the Treasurer, and one member at large from each of the Divisions, had been appointed to make a thorough study of the then form of organization of the Association, and to submit at the semi-annual meeting their recommendations on the subject.

The committee was unable to complete its task by October 25th, the date of the opening session of the fall meeting held in Chicago, and at the Directors' meeting which was held the day before, namely on October 24th, it was decided to transfer the task to a new special committee consisting of the four officers of the Association namely the President, the two Vice Presidents and the Treasurer. This suggestion had the approval of the Directors and the special committee as so constituted immediately proceeded with the performance of its duties and made such progress that it became necessary to call a special meeting of the Directors, which was held in the city of Cleveland, on December 21st, 1927, the sole purpose of which was to submit the report of the special committee with a view to adopting a plan which could be submitted to this general meeting of the Association, which plan would reflect not only the views of the special committee but the reasoned opinion of the entire Board of Directors.

Without burdening you with unnecessary detail, it is sufficient to say that the committee recommended to the Board, and the Board approved of the recommendation unanimously, that the administration of the affairs of the Association be confided to one official whose title should be "Executive Secretary" and that the By-Laws should be amended to accomplish this purpose.

It was recognized that the duties of the new office could be best discharged by a man, trained as a paper merchant, who had developed qualities of leadership and executive capacity of a high order, and that it would be extremely difficult to find a man who would measure up to these requirements and, at the same time, be willing to give up an active business career in order to accept the executive secretaryship of this Association. The committee's search was rewarded in a way that is now familiar to the entire industry and nothing which could be said in this respect would enhance the name and reputation of Mr. Frank E. Floyd of Indianapolis, who finally yielded to the persuasion of the committee and agreed to accept the appointment.

Your Board of Directors was greatly pleased when the report of the committee was submitted at the special meeting and with one accord adopted the recommendation of the Committee.

The changes in the by-laws, necessary to accomplish the purpose above set forth, were adopted without a dissenting voice and are embodied in the report of the Board of Directors to be submitted to you at this meeting.

You will pardon me if I take the liberty of saying that I am not a little proud of my own contribution to this particular achievement, at the same time pointing out to you that what was accomplished would not have been possible except for the splendid spirit of cooperation on the part of Messrs. Gillett, Mathewson and Addoms.

The semi-annual meeting, held in Chicago, on October 24, 25, and 26th of 1927, was, in many respects, the most satisfactory meeting of that kind which has been held in recent years. Not only was it largely attended, but the various committee reports were followed with interest approaching enthusiasm, and in all of the various group meetings, an atmosphere of good will seemed to prevail which is the best guarantee for the future welfare of our organization.

The principal activities of the Fine Paper and Wrapping Paper Divisions will have been called to your attention in the reports of the respective Vice Presidents and it is not my purpose to trespass upon their prerogatives in directing your attention to such matters as their reports embrace.

The most important subject of a purely technical nature, which lies at the root of many of the problems of the paper merchant, is the extent to which the manufacturer should be expected to conduct his relations with the consumer of paper in such a way as not to injuriously affect the commercial welfare of the paper merchant who is the largest and most important factor in the distribution of paper.

For the most part, my experience as a merchant, and as the

President of your Association, convinces me that the manufacturers as a class are neither selfish nor short-sighted, and that they have no desire to compete with their own customers in meeting the requirements of the consumer. Now and then, instances of a contrary tendency are brought to the attention of your officers with the suggestion that it lies within the scope of the Association to correct these objectionable practices when they occur.

Your officers have not so construed the purposes and objects of the Association. In the first place, alleged grievances of this nature are not always what they seem to be, and in the second place, the correction of these conditions to the extent that they may exist, is necessarily the individual problem of the paper merchant who is affected. He has the right, acting as an individual, to notify his source of supply that unfair competition from that source of supply for the consumer business will necessarily result in that particular paper merchant's seeking other mill connections. A merchant who takes this position is well within his rights, provided that he acts as an individual and without seeking the aid or assistance of his colleagues in the industry. But, what he may do as an individual, the Association, as a collection of individuals, may not and cannot do, and the sooner that this is understood by our members, the better.

The fact is, that the great majority of manufacturers are constantly on the alert to conduct their own business in such a way as not to impose a hardship or to unfairly compete with the paper merchants, and good relations in the industry can be best promoted by a full and frank discussion of individual differences of opinion upon this and other topics, between two parties directly involved in such a situation, without recourse to Association officials or Association activity.

In our personal lives, we find it necessary to bear and forbear. The same is true in our business activities, and it is the deliberate belief of your President that within the paper industry there is a high degree of mutual respect existing between the merchants, as distributors, and the mills, as the manufacturers of paper, and that a prolongation of that mutual respect into the far distant future is the most important object of this Association.

Gentlemen, after attending the Wrapping Paper Division this morning, there is another thought that came to me that is not added to this report. It has been a great honor to be your President, but I would feel that it was an empty honor if I had not done something to deserve that distinction.

I feel, after hearing the reports put in here this morning from the Survey Committee, that I had rightly started something as Vice President. This was a mutual understanding and confidence among one another, which is necessary for us to successfully conduct the National Paper Trade Association.

When I saw the actual figures cast upon the board, it made me think about my trip when I started as a novice three years ago, when we gave actual figures from our own organization, showing how we developed certain things with the aid of cost accounting systems. And when I think of one or two of the concerns, and Jim Carpenter here, I mention his name whether he is here or not, when one of his associated companies allows him to put on the board here actual figures that occur in his own business, actually gentlemen, not theoretically, I feel that I have, and I hope I have, at least, created a little confidence among the merchants of the National Paper Trade Association.

The next is the report of the Treasurer, Charles Addoms, and in addition to the report of the Treasurer, he will explain this new assessment plan for those who haven't heard it before.

Treasurer's Report

CHARLES ADDOMS: The custom seems to have been to report on the fiscal year as far as finances are concerned, and to start with, I want to say that I have had to go away on a little vacation, or rather did go away, and was depending upon Mrs. Sheppard. Unfortunately she was laid up with a cold during the few days that intervened between my return and the meeting. So, these figures, however, are about what we generally had, but they are not what I expected to give you. In other words, I rather expected to give you some more detail.

Nov. 1, 1926—Oct. 31, 1927

BALANCE ON HAND Nov. 1, 1926:			
Cash in Bank			$4007.88
Petty Cash—Ridgway, Warner & Byers ac.			800.00
Petty Cash—N. A. Schoenbacher ac.			500.00
Petty Cash—C. K. Higgins ac.			300.00
			$ 5607.88
RECEIPTS:			
Dues for year 1925-1926		$ 50.00	
Dues for year 1926-1927			
New York	$9650		
Western	7550		
New England	5250		
Middle States	5200		
Pacific Coast	4725		
Central States	4400		
Philadelphia	3300		
Empire State	3000		
Baltimore & Southern	2350		
Northwestern	2025		
Southern	1650		
Va., Carolina	1525		
Southwestern	1400		
Mo. Valley	900		
Wisconsin	950	53,875.00	
Returns from loan to Entertainment Com.		3,729.00	
Surplus Chicago Luncheon		13.00	
Interest		175.25	
Total Receipts			$57,842.25
			$63,450.13
Less Disbursements			58,703.91
			$ 4,746.22
Disbursements:			
Rent	New York	$ 2,500.00	
	Chicago	2,072.93	
Salaries	New York	19,277.63	
	Chicago	11,307.66	
Traveling Expenses	New York	3,693.84	
	Chicago	1,801.29	
Office Expenses	New York	397.69	
	Chicago	232.77	
Stationery & Supplies	New York	916.46	
	Chicago	382.80	
Postage	New York	435.73	
	Chicago	291.84	
Telephone and Telegraph	New York	568.05	
	Chicago	247.11	
Meetings		1,848.60	
Bulletins		1,226.69	
Cost Accounting		686.05	
Statistics		293.75	
Furniture and Fixtures		150.00	
Loan to Entertainment Committee		4,266.50	
Miscellaneous		6,106.52	
Total Disbursements			$58,703.91
Balance on Hand Oct. 31, 1927			
Cash in Bank		$ 3,146.22	
Petty Cash—Addoms, Chamberlain A/C.		800.00	
Petty Cash—N. A. Schoenbacher A/C.		800.00	$ 4,746.22

Audited and found correct.

Auditors: (Signed) Allen C. Damon, Geo. McKinney.

MR. ADDOMS: We have been considerably handicapped by the great delay on the assessment plan because of the non-receipt of reports from the individuals. We are still short some of them, although the great majority are in. We waited until we didn't dare wait any longer, because if we waited very much longer and didn't send the bills out, we would have been bankrupt.

We made up the bills and sent them to the various and sundry treasurers of the fifteen or sixteen local associations. We were compelled to take the amount previously set up as being the only thing we could go by for those members who had not yet reported.

On that basis, considering $3 per capita and a capital assessment of $50 and $100 according to the plan, at the present moment we calculate we have $59,100. There are, of course, some adjustments to be made. The old plan was $55,025.

So, as I told you in Chicago, probably the $3 per capita could be reduced to maybe $2.75 or possibly a little would be added to it. There are some adjustments still to be made, so we can't call this figure final.

I will say that the $59,100 is correct, and I will also say at this time that what adjustments have been made are not very large. They have been rather small amounts as a rule. We take the $59,100 and deduct 10 per cent from that, so we will be within the budget prescribed last October.

I want to ask all you directors and representatives of the different locals to get hold of your treasurers to see if you can't get in the final figures from those who have not answered the questionnaires. Is there anything else that I can explain? Is there anything you would like to ask about the assessment plan?

PRESIDENT MALLALIEU: Mr. Addoms, one thing you might explain to them is the idea that the assessment on this basis was to get new members without increased cost. There has been a question among locals for several years in getting in members at low cost—that it would be a hardship on the rest of the members for the first year, there is no question. So in getting new members it has been figured out from time to time, what the ultimate dues would be to the National Paper Trade Association

MR ADDOMS: Out of the fifteen locals, there are eight who are assessed less than they were before. Seven have been added to, none of them very extravagantly.

I would say, Mr. President, and Gentlemen, that if we knew ahead of time that this was going to come out so equitably, we wouldn't have done the work at all, we simply would have adopted the principle which is behind the report to make an amount to apply to each local. We would take the proper amount and add to that or deduct from it, according to requirements and that amount would be a fixed amount so that the National Association Treasurer isn't going to lay for any individual anywhere throughout the country, any amount that he may be assessed for. The amount is set up for your Treasurer by the National Association. Let us assume, for example that amount is $3000. We are not asking that he shall collect from each individual the amount that we set down on a piece of paper, but so long as he collects $3000 and pays it to the National Association, we don't care how it is collected.

That carries with it the report Mr. Mallalieu, for example, that party that pays $3000, had say, 30 members, and they should get one or two new members. Each one of those thirty members would pay less than before. If, on the other hand, the local association lost members, each member would pay more or less of their proportion to the difference lost.

PRESIDENT MALLALIEU: Gentlemen, are there any questions you would like to ask pertaining to this plan?

MEMBER: How does it compare with the budget?

MR. ADDOMS: The budget set up was 53 to 54. The amount is $59,100. If we deduct 10 per cent and carry it down to about what we figured on, and under the new changes, such as Mr. Floyd, the removal of the Chicago office and that kind of thing, we think that amount is ample for our requirements.

PRESIDENT MALLALIEU: Are there any other questions you gentlemen would like to ask? Thank you very much.

I know how much work Mr. Addoms put in on this arrangement, because I have met with him so often, but I believe this only covers a small fraction of the time he has given to the work altogether.

I think this organization owes a standing vote of thanks to Mr. Addoms on this new assessment plan.

The members arose and applauded.

PRESIDENT MALLALIEU: Before calling on Mr. Considine, there is one thing I meant to put in my report. C. A. Miller was our first president. I tried to get him here to give you a little history of the organization in its infancy, but he has taken a trip which has been coming to him for years—it should have been at least—and he is on a ship at the present time, and can't be with us.

Before proceeding to the next speaker, there is another thing I want to mention. Robert Lasher, Chairman of the Entertainment Committee, received so many compliments about the dinner and the theater party last night that I wish also to give him a standing vote of thanks for the good work done.

. . . The members arose and applauded. . . .

PRESIDENT MALLALIEU: Next is the report of the Import Committee, by Mr. Considine.

Report of Import Committee

N. A. CONSIDINE: Gentlemen, there isn't very much that can be said about the work of the Import Committee this year except that I would like to say that in our present President, we have a real diplomat. The Import Committee had a lot of misunderstanding a few years ago with the Import Committee of the manufacturers. Shortly after, Mr. Mallalieu suggested that I come over to New York some day and have luncheon with Major Bullock of the American Paper and Pulp Association Import Committee.

We sat down at a table and a lot of the difficulties vanished. We knew we had a lot of things in mind, and they had a lot of things in mind, but they were two different propositions altogether. After some discussion, Major Bullock told me that in three years of careful investigation, they had never found a member of the National Paper Trade Association guilty of any improper entries or miscalculations in imports.

The aim and purpose of the Manufacturers' Import Committee has been to protect as they have publicly declared, the honest importer. We of course, are working for the same end.

I would like to pay public tribute at this time, to the cooperation of Major Bullock. He has given us in advance of the usual channels, information about decisions of interest to paper merchants. At the present time, there seems to be so little importing of paper outside perhaps, New York and New Orleans and maybe scattered imports in other parts of the country, that it is very difficult to even get members on the Import Committee. There doesn't seem to be much work to do.

I can merely suggest to you to continue the present Import Committee as it stands. Mr. Wolbrette and myself will be glad to hold ourselves ready to assist any member of the Association who might need assistance during the coming year. (Applause.)

PRESIDENT MALLALIEU: Gentlemen, you have heard the report of Mr. Considine, Chairman of the Import Committee. A motion is in order to accept that report and continue that Committee with one additional member to be appointed by Mr. Considine. We would like to have that motion put in this form inasmuch as Mr. Walbrett is a Wrapping Paper merchant and Mr. Considine is a Fine Paper merchant.

. . . The motion was put to a vote, was seconded and carried . . .

PRESIDENT MALLALIEU: In the past, gentlemen, it has been our

custom to have a banker and economist here to talk to us at these meetings. I felt that we would improve that a little bit if we could have some one come here and talk to us in our own language.

I invited two prominent manufacturers, one a coarse paper manufacturer and one a fine paper manufacturer to come here this afternoon to talk to us, feeling they would be much closer to you than some outsider, to give predictions or statistics to you, some one who is in sympathy with your problems and to tell you how they felt toward the National Paper Trade Association.

I was very successful in having these two manufacturers accept, both of whom are Past Presidents of the American Paper and Pulp Association.

I want to introduce to you Mr. George W. Sisson, Past President of the American Paper and Pulp Association. (Applause.) Likewise President of the Racquette River Paper Company. I think I have known Mr. Sisson from the first week he entered into the paper manufacturing industry. Mr. Sisson, step up here please, and address these gentlemen.

(Mr. Sisson as usual gave a very acceptable address. He was followed by W. J. Raybold whose remarks were also very much appreciated.)

PRESIDENT MALLALIEU: Mr. Sisson is still in the room and Mr. Raybold is here, and I think we are under obligation to these gentlemen who have come here this afternoon. I appreciate the compliment they have extended to me in accepting my invitation, and I wish you would all stand up and give them one good handclap.

. . . The audience arose and applauded. . . .

PRESIDENT MALLALIEU: Next is the report of the Board of Directors by Mr. Byers. I wish you gentlemen would give close attention to this report as one of vital interest to each and every member.

Report of Board of Directors

MR. BYERS: Mr. President and Gentlemen: There comes before this meeting for attention the report of your Board of Directors and that involves two meetings that the Board has held since the October meeting of the Association. The first was held in Cleveland on December 12, 1927, and the second on February 20, 1928, in this hotel. The proceedings of the special meeting in Cleveland on December 12 are more particularly embodied in the minutes of the second meeting held on the 20th instant, but in order that the Board might perform its functions at the meeting on Monday of this week, it was first necessary to adopt certain amendments to the by-laws. That was done at the Cleveland meeting.

Your by-laws provide that your Board of Directors have the power to adopt amendments but that those amendments must come before the general meeting of the Association for action.

May I please, therefore, direct your attention, first, to the amendments adopted by the Board in Cleveland. The first amendment refers to Article V, Section 8. The amendment is as follows: "There shall be an Executive Secretary of the Association to be appointed by the Board of Directors. He shall direct all of the Association activities under the supervision of the President. He shall be the Executive Secretary of each division, and, with the approval of the President, he may employ one or more assistants, and in his discretion he may designate appropriate titles to indicate the duties of each."

Section 8, as it was before it was amended, read as follows:

"There shall be two Secretaries, one for the Wrapping Paper Division, and the other for the Fine Paper Division. Their duties shall be prescribed by the respective vice presidents, subject to the approval of the President, or by the respective Executive Committes, or by the Board of Directors."

The appropriate motion, if you so approve, is to ratify the adoption by your Board of Directors of new Section 8 or Article V of the By-Laws.

. . . Upon motion regularly made and seconded, it was unanimously voted to ratify the new Section 8 of Article V. . . .

MR. BYERS: The next amendment was that of Section 6 of Article VI. Section 6 in its old form was as follows:

"The Board of Directors shall appoint two secretaries, one for each division, and fix the compensation for their services."

New Section 6, adopted by your Directors, subject to your action, is as follows—to repeal the present Section 6 and substitute the following:

"The Board of Directors shall appoint an Executive Secretary of the Association who shall also be the Executive Secretary of each Division as provided in Article V, Section 8. The compensation of such official shall be fixed by the Board of Directors, and to insure continuity of service by a competent man, the said Board shall have power to enter into a written contract with such official for a period of three years at a compensation to be therein specified which may be subject to increase during the term of the contract and which contract shall require the signature of the President and both Vice Presidents in order to become the obligation of the Association."

That amendment was duly adopted in Cleveland, and if you so please, the vote of this body would be to approve the adoption of that amendment to by-laws.

. . . Upon motion regularly made and seconded, it was unanimously voted to adopt Section 6 of Article VI as amended. . . .

MR. BYERS: The next amendment to the by-laws acted upon by the Board has to do with Section 6 of Article V. In its former form, that section read as follows:

"The Treasurer shall receive all moneys and disburse the same upon voucher approved by the President or either Vice President. He shall fully account at the annual meeting or at any time upon demand of the President. He shall be bonded at the expense of the Association."

The amendment as adopted by your Directors is as follows:

"The Treasurer shall receive all moneys and disburse the same upon voucher approved by the President, either Vice President, or the Executive Secretary. Checks drawn upon the funds of the Association shall require the signature of the Treasurer and the counter-signature of either the Executive Secretary or the President or either Vice President. The Treasurer shall fully account at the annual meeting or at any time upon request of the President."

. . . Upon motion regularly made and seconded, it was voted to adopt the amendment unanimously. . . .

MR. BYERS: The next amendment is an addition to Article X. The article, prior to the addition, read as follows:

"Each organization member shall pay into the treasury on the first day of November in each year as annual dues in advance such sums as may be assessed by the Board of Directors."

To that is added this provision:

"No obligation on the part of the Association shall be undertaken during any fiscal year in excess of the estimated income forming the basis of the assessment made by the Board of Directors except by vote of the Board."

PRESIDENT MALLALIEU: You have heard the addition to Article X. What is your pleasure?

. . . Upon motion regularly made and seconded, it was voted unanimously that the addition to Article X be adopted. . . .

MR. BYERS: Now, gentlemen, to report specifically for the meeting of the directors held on February 20, 1928, your Board was addressed by Mr. Grossman, representing the American Arbitration Association, and the Board endorses for your approval the following resolutions suggested by Judge Grossman:

"RESOLVED, That the National Paper Trade Association, having been advised of the purposes and activities of the American Arbitration Association, endorses the principle and practice of arbitration and affiliates itself with the American Arbitration Association in its execution of these purposes and plans; and

"RESOLVED, That because of the economic benefit to be derived from the use of arbitration through the prompt, inexpensive, and efficient settlement of controversies arising out of business transactions, the National Paper Trade Association recommends to its

affiliated local organizations that they arrange with the American Arbitration Association for cooperation in the establishment of arbitral facilities for the use of members and those with whom they do business and for the preparation of adequate rules of procedure and such other machinery as may be required under the various arbitration laws; and be it further

"RESOLVED, That the National Paper Trade Association authorizes its Board of Directors to establish arbitral facilities for the settlement of disputes arising between members of different local affiliated organizations and to appoint a special Committee on Arbitration to supervise the conduct of such arbitration."

Next your Board listened to the report of the Secretary of the Fine Paper Division who reported concerning the meeting of the Executive and Administrative Committees of that Division. He reported that twenty-five were present and that various committee reports were presented at that meeting none of which required action on the part of the Board of Directors save the report of the Marketing Committee.

Following the receipt of the report of that committee, a resolution was presented by the Executive Committee of the Fine Paper Division requesting the directors to appropriate $7,500 of the Association funds to test the feasability of the plan of the Marketing Committee for national publicity.

The debate on that resolution by your Board of Directors in the offering of a motion which was duly seconded and carried, that the said recommendation be referred to the new Executive Secretary to investigate and report later to your Board.

From the Executive Committee meeting of the Wrapping Paper Division there was reported that pursuant to action taken at the October, 1927, meeting in Chicago, the Vice President in charge of Wrapping Paper had announced his intention of appointing special committees on Kraft Paper and on Bags and such other special committees as the need of the Division might indicate, to study the merchant problems peculiar to those items.

Then Mr. Addoms offered for the consideration of the directors the following resolution:

"Inasmuch as Mr. N. A. Schoenbucher has been associated with the National Paper Trade Association for some several years at an annual salary which has been periodically increased to the current figure of $12,000, and in view of the necessarily brief notice given him of the termination of his employment by the Association and the unusual expense incurred by him less than one year ago in removing his family and his home to the City of Chicago, it is believed that an additional sum of money as an evidence of good will toward him should be presented to him. Be it therefore

"RESOLVED, That the Treasurer of this Association be instructed to pay to Mr. N. A. Schoenbucher out of the Association funds, the sum of $3,000 on February 29, 1928, the date of the expiration of his contract with and service to the National Paper Trade Association."

There was then presented to the meeting, pursuant to the action taken by the Board of Directors in Cleveland, the following proposed contract with Mr. Floyd.

(The Contract was read.)

That contract was unanimously approved by the Board, the officers were directed to execute it on behalf of the Association, and it awaits the signature of Mr. Floyd as soon as this meeting shall have acted upon this report.

Next, your Board voted the Iowa Association into membership in the National Paper Trade Association on a basis of $750 a year dues. Then there was a rising vote of thanks tendered to President Mallalieu on the motion of Mr. McClellan for the faithful and loyal services which he has rendered as President of your organization.

Then, on motion, it was voted to renew the contract of retainer with the same attorney as chosen last year.

Nomination of Officers

Finally, your Board, pursuant to the authority conferred upon it by Section 1 of Article V of the By-Laws, proceeded to the nomination of officers of the Association for the ensuing year, with the following results: For President, W. N. Gillett, for Vice President in charge of Wrapping Division, Harry Mathewson, Vice President in charge of Fine Division, K. S. Warner, Treasurer, Mr. Charles Addoms.

By an oversight for which I am responsible, the Board failed to designate the date of the annual meeting of this Association for next year. In order to synchronize with the meeting of the American Paper and Pulp Association the week beginning February 18, 1929, should have been chosen as the date of the annual meeting. I am sure that the Board would have done that if the matter had been called to its attention. Will you please consider that that recommendation is before you. This, gentlemen, constitutes the report of the Board of Directors to the meeting. (Applause.)

PRESIDENT MALLALIEU: I want to assure you that your officers who constituted this Special Committee are very much pleased to have you accept their recommendation unanimously. We went into this in a serious-minded way. We felt that when we had secured the services of Mr. Floyd that we had done the best we could for this Association.

The next to be brought up at this meeting is really a subject that is too big for me. It is entitled "Introduction of Frank E. Floyd." He needs no introduction. At the same time, I wish I were capable of telling you some of the things I think of him and what you men I know all think of him, because I know we are unanimous in our thoughts even though I cannot express them.

Mr. Floyd, will you kindly step to the platform? (Applause.)

Mr. Floyd Speaks

FRANK E. FLOYD: Well, fellows, I have been getting hotter for the last two or three minutes than if I had a temperature of 105. This royal expression of your friendship for me cannot be expressed in just plain words by one who has no more elocution in his mind than I have. I appreciate it all, and I want you to know that when I look back four months to the October meeting and a year to the meeting in this room, little did I think that in such a short time a development in the career of a man who has reached my age could possibly take place as it has.

You know I appreciate this. You know that I am coming into this work with an intention of performing the duties to the best of my ability, the judge of which you will have to be. But, fellows, I am not doing it without some sacrifice. There isn't a man within the sound of my voice that believes it is easy, after fifty-five years of living in one place, associated for thirty-eight years with one man whom I love, associated for thirty-one years with one firm that I helped to start, can do all those things without some concern. But that is history.

I accept this position, as I was asked to do, by the Board yesterday, and I do it fully realizing the responsibilities and obligations, and in doing so I wish to just for two or three minutes with your indulgence make some observations. A man as old as I am would be a fool if he would make any predictions. But if the program of today had been framed, it could not have been more euphonious because what I have in my pocket to say to you fits in exactly with what these two noble men of the other side of the industry so well said.

Brother Chairman, I don't want you to feel nor do I want anyone in this room to feel that I have any intention of sermonizing. Mr. Raybold took a creed. I am going to take a text, and I am going to read that text to you, and I am doing it with sincerity, regardless of the belief of anyone in the room, and that text is found in the Sixteenth Chapter of St. Matthew and it reads this way: "When it is evening, ye say it will be fair weather for the sky is red and in the morning it will be foul weather today for the sky is red and lowering. Ye can discern the face of the sky but ye cannot discern the signs of the times."

This, fellows, is just as true today as it was two thousand years ago. In our advanced age of science and research, we are finding out a great many things, and we are learning more and more every day regarding the past, and we are also making great

discoveries for the future. The telephone, the radio, television, all such improvements in science bring us together as a people much more closely than ever before. The airplane has brought in the last two years the earth, or the different people of the earth rather, closer than ever before.

This is all for our good and it puts the obligation of service right up to us, and we must realize it.

Do you know that upstate here I am informed that there is quite an institution which is surrounded by fifty or sixty stations all the way from fifteen miles to a hundred and thirty-five miles distant, an electrical institution with boosting stations thus around it. I am told that a man sits at a desk with a series of tuning forks, small, large, perhaps that large, I don't know. He will take one of these tuning forks and strike it and put it in front of a telephone receiver and one hundred and thirty-five miles away a generator of like kind starts to making electricity, light and power, and the human hand hasn't touched it.

I am also informed that in the city of Washington, they have just established a series of reservoirs for the purification of the water for the citizenry of our Capital City. I also am informed that in that system, it is necessary for the general manager to know the height of water in each and every one of these reservoirs just the instant he cares to know, and he picks up a telephone receiver and calls reservoir No. 4, and the electrical mechanical man advises him the height in feet and inches with no human being around.

Now we are all familiar with the movement of automobiles, electrical engines, airplanes, boats, by the use of radio waves. There isn't a man in this room who hasn't seen the demonstration perhaps that has been going over the country where an automobile of a given advertised kind will go in and out through the room because the fellow back there where he has an aerial is touching a button.

Fellows, in ten or fifteen years from now those of us who are driving automobiles out of heated garages, virtual palaces on wheels, will be sending our children to school, going to business ourselves and our wives doing their shopping from one or two-passenger planes, leaving the housetop from a tower or an elevator. That is possible.

What has all this to do with the paper business? Today, are they not signs of the times? Are we not into the very thought of the trend of affairs? So therefore the answer is easy.

Organizations both large and small are making investigations of all kinds regarding their past, endeavoring to work for the future, and as far as the profits in some organizations that I know are concerned, it will be very easy to forget the past because the income tax collector will not remind you of it.

We don't care, fellows—we are interested, of course, but we don't care what is found in King Tut's tomb. What we want to know is whether we are going to have a tomb or not, and we want to look out that it isn't too soon.

Now we cannot succeed unless this very thing that has been spoken of so much obtains in our own individual business, our own individual lives and in our own association. Let's not use this word unthinkingly. I am referring to the word "cooperation." Let it be operation and that operation take place within our own hearts, and I say to you gentlemen there is no association of men of the caliber of you men who will cooperate with himself in his own heart need be afraid of the welfare of the association, not the least bit.

I am fully convinced that after these twenty-five years of service to each other we are entering upon an era which by virtue of all of the effort you have all made is going to be entirely worth while to the industry and perhaps to the public as well.

Just a few words more. There is none of you who travel the highways of New York State, Indiana, Illinois, Iowa, or whatnot, but what find signs all along the way. The signs read, "Stop! Look! Listen!" "Go Into Second, Dangerous Curve Ahead!" "Bridge Out!" What do they all mean? They mean to you and to me that we have to do just exactly what that sign says or we are into trouble. The question I wanted to ask you, as I have asked myself, is, "Why should we step on the gas, expect to make the crossroads of the end of the fiscal year, and probably be taken up in pieces?" There is no common sense (and common sense rules the business of today if it is ruled right) in the thought that you can hope to do things that other people don't do unless you attempt to do it straight. There is no use to step on the gas when the sign says "Dangerous Curve ahead!" You know the result, you read it every day in the papers. There is absolutely no other answer.

Your Association is trying to give and has tried to give and will continue to give you the best it has in the shop. These signs are going to be dropped to you every once in awhile and my advice to you is that you had better read the signs before approaching the crossing.

In accepting this office, I accept it with the understanding that all you men will use the office, that you will come in contact with it as much as you possibly can, and the office and its force will pledge to you here now their hearty support of every endeavor that you attempt to function with the office in getting across to the membership.

Gentlemen, I am here, I will take office March first, I accept same, and I trust that we will all believe at the end of the first year that I have made a wise move and that you are not sorry for it. (Applause.)

(Mr. Floyd then signed his contract in the presence of the membership amid renewed applause.)

Election of Officers

PRESIDENT MALLALIEU: Is there any unfinished or miscellaneous business to come up at this time? If not, we will proceed to the election of officers.

At the Board of Directors' meeting on Monday afternoon the following nominations were made: President, W. N. Gillett, Chicago; Vice President in charge of Wrapping Papers, Harry W. Mathewson, of Minneapolis; Vice President in charge of Fine Papers, Mr. K. S. Warner, of New York; Treasurer, Charles Addoms.

. . . Upon motion regularly made and seconded, it was voted that the Secretary cast one ballot of the Association for the gentlemen named. The vote was unanimous. . . . (Applause.)

PRESIDENT MALLALIEU: On the ballot cast, I hereby declare the officers for the coming year are as follows: President, W. Noble Gillett; Vice President in charge of Wrapping Papers, Harry Mathewson; Vice President in charge of Fine Papers, K. S. Warner; Treasurer, Charles Addoms.

Mr. Miller, I will ask you if you will kindly escort Mr. Gillett to the platform. (Applause.)

W. N. GILLETT: You will be happy to know that I have not a speech of acceptance. There are many ways of expressing the same thought, however. Mr. Raybold, in his splendid address a few minutes ago, concluded by saying that what we needed was less conversation and more work. The same thought was expressed to me just prior to the meeting by Tom Scanlon. He said to me, "if you expect to continue in Association activities, you will have to work harder than you have the last two years."

Gentlemen, I will work as hard as I can. I will pledge you the very best I have in me. I appreciate the honor, and I appreciate the responsibility, and I need your cooperation. Thank you! (Applause)

PRESIDENT MALLALIEU: Mr. McClellan, I will ask you if you will kindly escort your neighbor from Minneapolis to the platform—Mr. Harry W. Mathewson. (Applause) I think you have seen his face before.

MR. MATHEWSON: Gentlemen, I appreciate this honor very much. I will do all I can to keep up the activities of the Wrapping Paper Division and the Association as a whole, and if I can ever be of any help to you personally or collectively, I will do all I can. I thank you! (Applause)

PRESIDENT MALLALIEU: Mr. Holden, will you kindly bring Mr Kit Warner to the platform.

Mr. Warner Makes Remarks

MR. WARNER: I heard a rumor in the corridor on Monday that the action taken this afternoon was possible, and fearing that what I might have to say could not be a part of the records, I have just put a few words on paper.

In accepting this election at your hands, I realize that it is an honor conferred on the New York Association of which I am a member, and a responsibility laid upon my shoulders as an individual to administer the affairs of our Fine Paper Division in the interests of all local associations and their members. The extent to which that responsibility can be discharged will be measured by the mental attitude of our constituent elements, that is, the extent to which they are able to think in terms of the industry. Pardon me if I say that this is more important than applause. The true office of a trade association is to educate its members to think of their competitors as companions in the same endeavor. Are you willing to support that platform? (Applause) If you are, I am optimistic in boarding the ship that is to be piloted by Frank Floyd. Thank you! (Applause)

PRESIDENT MALLALIEU: Jim Carpenter, the man right in front of you has worked very hard. I wish you would escort him to the platform. (Applause)

Mr. Addoms Speaks

Mr. ADDOMS: This, gentlemen, is the second time I have been led up to the slaughter, and it is the last time. I have an unfinished job, and we are going to finish it very soon, and a part of the new work will be improved system of keeping accounts, and so forth. I will do the very best I can, and I notice in the new by-laws that the Treasurer does not have to be bonded, so Frank had better keep an eye on me at least. You never know what temptations will arise with these new automobiles and whatnot. Thank you, gentlemen. (Applause)

PRESIDENT MALLALIEU: I was afraid somebody might ask the President if he ever has been bonded. The President has been very lax in that respect and didn't put him under bond, but I think his report was all right for a couple of my friends—his competitors—said it was.

You have met the new officers, the officers for the coming year. If honesty of intention, hard work, their interest in Association work means anything, you are going to progress in 1928 as you have never progressed before in this Association. That is my honest idea, and I know these boys, all of them—I know them closely—have worked with them, have slept with most of them—and I will tell you I am proud of the new officers of the National Paper Trade Association.

Before closing, there is one thing I did overlook in my report and that was this, to thank the members of this Association for the assistance they have given me in the three years that I have been your officer. I want to thank the committees, and specially the chairmen of those committees who have worked so hard to help each and every one of us.

Gentlemen, we are going to progress just as we help one another. I thank you! (Applause)

MR. MILLER: Before we adjourn, I would like to make a motion that we show by a rising vote our appreciation of the wonderfully fine services of the officers during this past year.

The audience arose and applauded.

PRESIDENT MALLALIEU: Gentlemen, a motion to adjourn is in order.

It was voted to adjourn at four-thirty o'clock.

Those Who Attended the Convention

Official Registration of the National Paper Trade Association

A

Adams, H. V., B. W. Wilson Paper Co., Richmond, Va.
Addoms, Charles, Miller & Wright Paper Co., New York.
Alcorn, Jas. E., Alling & Cory Co., Cleveland, Ohio.
Altman, J. H., Standard Envelope Mfg. Co., Cleveland, Ohio.
Andrews, C. R., C. R. Andrews Paper Co., Pittston, Pa.
Andrews, C. W., C. R. Andrews Paper Co., Pittston, Pa.
Arndt, V. A., Riegel & Co., Inc., Philadelphia.

B

Barrett, Nicholas J., Thomas Barrett & Son, New York.
Baxter, Wiley, Jr., Baxter Paper Co., Baltimore, Md.
Beck, Leon, Charles Beck Co., 609 Chestnut, Philadelphia, Pa.
Beckwith, C. L., H. N. Carter Paper Co., Springfield, Mass.
Beckwith, R. M., Minneapolis Paper Co., Minneapolis, Minn.
Beebe, Clarence, Neumeyer & Dimond, 82 Beaver, New York.
Beggs, G. E., Hubbs & Hastings Paper Co., Rochester, N. Y.
Bement, Edward D., Chas. A. Esty Paper Co., 288 Congress, Boston.
Berger, Harry, H. Berger Paper Co., Lawrence, Mass.
Binsford, W. W., Andrews Paper Co., Boston.
Blackman, Arthur, D. F. Munroe Co., Boston.
Bond, B. F., Jr., B. F. Bond Paper Co., Baltimore, Md.
Boyce, G. W., Boyce Paper Co., 100 N. West Syracuse, N. Y.
Bradley, Jas. E., Bradley-Reese Co., Baltimore, Md.
Brown, Arthur L., Diem & Wing Paper Co., Cincinnati, Ohio.
Brown, Herbert S., Carter, Rice & Co. Corp., Boston.
Bull, Richard, Bradner, Smith & Co., Chicago.
Butler, E. C., Perkins & Butler, Inc., Worcester, Mass.

C

Carpenter, J. A., Kansas City Paper House, Kansas City, Mo.
Carter, Hubert L., Carter, Rice & Co. Corp., Boston.
Caskie, G. E., Jr., Caskie-Dillard Co., Lynchburg, Va.
Cauthorne, R. A., Cauthorne Paper Co., Richmond, Va.
Chandler, Alan, Alling & Cory Co., Pittsburgh, Pa.
Clancy, John M., Southeastern Paper Co., Louisville, Ky.
Clayton, Robert G., Sheridan Clayton Paper Co., St. Joseph, Mo.
Cleveland, W. G., E. C. Palmer & Co., Ltd., New Orleans, La.
Clofford, S. B., C. P. Lesh Paper Co., Indianapolis, Ind.
Considine, N. A., Paper House of Pennsylvania, Philadelphia.
Custer, G. G., W. F. Mackie Paper Co., Milwaukee, Wis.

D

Damon, Allen C., Paul E. Vernon Co., New York.
Danchy, Jas. A., Schwarz Paper Co., Chicago.
Dillard, S. S., Dillard Paper Co., Greensboro, N. C.

E

Eaton, Ed. A., A. M. Eaton Paper Co., Boston and Waltham, Mass.
Ebbets, W. E., Coy, Disbrow & Co., Inc., 309 Canal, New York.
Epes, T. S., Epes-Fitzgerald Paper Co., Richmond, Va.
Esty, Chas. A., Chas. A. Esty Paper Co., Worcester, and Boston.

F

Field, C. R., Field, Hamilton, Smith Paper Co., Omaha, Neb.
Fleischer, Robert A., Century Paper Co., Indianapolis, Ind.
Floyd, F. E., Crescent Paper Co., Indianapolis, Ind.
Forchheimer, F., Chatfield & Wood Co., Pittsburgh, Pa.
Fox, Fred. F., Crescent Paper Co., Indianapolis, Ind.
Franc, Jerome, Franc-Graham Paper Co., Inc., New York.
Fuhlage, Alfred, Beacon Paper Co., St. Louis, Mo.

G

Garner, Samuel G., J. E. Linde Paper Co., Newark, N. J.
Gascon, Martin D., Alling & Cory Co., Cleveland, Ohio.
Giddey, Geo. H., Beecher, Peck & Lewis, Detroit, Mich.
Gillet, W. N., Chicago Paper Co., Chicago.
Gledhill, John A., Raymond Paper Co., Inc., Lewiston, Me.
Grazelle, W. R., Holland Paper Co., Inc., Buffalo, N. Y.

H

Hall, Arthur C., John Carter & Co., Inc., Boston.
Hall, Edgar A., Jr., Pilcher-Hamilton Co., 340 N. Dearborn, Chicago.
Hall, Edward L., Whitcomb Envelope Co. Div. U. S. Envelope Co., Worcester, Mass.
Halls, Fred. W., Fred W. Halls Paper Co., Ltd., Toronto, Can.
Ham, Arthur E., Arthur E. Ham & Sons, Boston.
Ham, Herbert C., Arthur E. Ham & Sons, Boston.
Hanlon, L. L., Alling & Cory Co., Buffalo, N. Y.
Hartung, A. Richard, A. Hartung & Co., Philadelphia, Pa.
Hatfield, Allan I., Hurlbert & Hatfield, Boston, Mass.
Haynie, O. J., Boston, Barton, Duer & Koch Paper Co., Baltimore, Md.
Helmer, Harold, Beecher, Peck & Lewis, Detroit, Mich.
Herrlinger, Ed. F., Union Selling Co., Cincinnati, Ohio.
Herrman, W. J., C. A. Bauer Co., Milwaukee, Wis.
Hoel, Ernest H., Carpenter Paper Co., Omaha, Neb.
Holden, W. H., G. W. Millar & Co., Inc.
Hopkins, Forest, The Paper Mills Co., Chicago.
House, A. J., Union Paper & Twine Co., Detroit, Mich.
Hurlbert, H. A., Hurlbert & Hatfield, Boston, Mass.

I

Ihsen, H. G., Hubbs & Howe Co., Cleveland, Ohio.

J

Johnston, Dean Y., Chatfield & Woods Co., Cincinnati, Ohio.
Johnston, Robert S., Old Dominion Paper Co., Norfolk, Va.
Jones, J. B., Western Newspaper Union, Omaha, Neb.
Jones, Sydney, Hudson Valley Paper Co., Albany, N. Y.
Judd, B. A., Petrequin Paper Co., Cleveland, Ohio.

K

Keffer, Harry G., Johnston Paper Co., Harrisburg, Pa.
Kohn, H. M. Marshall Paper Co., Appleton, Wis.
Keim, Alfred, J. E. Linde Paper Co., New York.
Kennedy, P. T., S. Walter, Inc., Philadelphia.

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Paper Definitions

Classification and Definitions of Paper Terms

By F. A. CURTIS and CLARENCE J. WEST

The first Dictionary of Paper Terms ever compiled in this form and the only work of its kind available.

1450 Paper Terms

Drawn up by the Sectional Committee on Definitions.

THIS BOOK should be in the hands of every paper manufacturer, every paper merchant, exporter, importer, every converter and every buyer of paper, as well as every producer of materials used in paper manufacture.

CONTENTS

In this list of definitions has been included, as far as possible—

(a) The basic paper terms used in the classification (identified by the classification numbers).

(b) The various commercial papers, the names of which have, in most instances, grown out of special uses to which the papers have been put.

(c) Various converted articles made from paper.

(d) Standard sizes of papers.

(e) Special finishes of papers.

(f) Miscellaneous paper terms.

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Those Who Attended the Convention

Koch, Chas., Barton, Duer & Koch Paper Co., Washington, D. C.
Kohn, H. M., **Marshall Paper Co., Appleton, Wis.**
Kratz, M. L., Alling & Cory Co., Buffalo, N. Y.
Kuster, John F., Andrews Paper Co., Boston.

L

Landau, David S., Alling & Cory Co., New York.
Lang, Charles L., Hubbs & Howe Co., Cleveland, Ohio.
Larkin, Jack, Federal Paper Co., Ltd., 404 McGill, Montreal, Can.
Lazenby, Eugene H., Industrial Paper Co., Baltimore, Md.
Lesh, Perry W., C. P. Lesh Paper Co., Indianapolis, Ind.
Leslie, A. W., John Leslie Paper Co., Minneapolis, Minn.
Likins, G. R., Springfield Paper Co., Springfield, Mo.
Lindenmeyer, Fritz, Henry Lindenmeyer & Sons, 32 Bleecker, New York.
Lipscomb, B. W., Richmond Paper Co., Richmond, Va.
Lincoln, Carl E., Bradner, Smith & Co., Chicago.

M

Maltz, Harry, Houston Paper Co., Houston, Tex.
Manke, H. C., Van Paper Supply Co., St. Paul, Minn.
Marks, Nathan, Knoxville Paper Co., Knoxville, Tenn.
Marshall, John, Louisville Paper Co., Louisville, Ky.
Marshall, Louis J., Marshall Paper Co., Appleton, Wis.
Matthewson, H. W., Paper Supply Co., Minneapolis, Minn.
McCracken, James, Riegel & Co., Inc., Philadelphia.
McKinney, Geo., F. A. Flinn, Inc., New York.
McLaughlin, W. C., Chatfield & Woods, Cincinnati, Ohio.
McClellan, F. L., McClellan Paper Co., Minneapolis, Minn.
McClellan, T. M., Jr., Bham Paper Co., Birmingham, Ala.
McClellan, W. J., Carter, Rice & Co., 246 Devonshire, Boston.
McGinley, E. F., Anderson Paper & Twine Co., Johnstown, Pa.
McIlam, A. A., Pres., Columbia Paper Bag Co., Baltimore, Md.
Mead, Ernst C., Richmond Paper Co., Richmond, Va.
Merriam, Edward, Merriam Paper Co., New York.
Merrill, Frank H., Andrews Paper Co., Boston.
Miller, J. F., Chope-Stevens Paper Co., Detroit, Mich.
Miller, J. H., Standard Envelope Mfg. Co., New York.
Meyer, S. L., Louisiana Paper Co., Ltd., Shreveport, La.
Miller, Albert M., Central Ohio Paper Co., Columbus, Ohio.
Moffitt, Ivan, Canadian Paper Trade Association, Toronto, Can.
Moody, W. F., G. W. Moody & Son, New Castle, Pa.
Moss, L. H., Atlanta Paper Co., Atlanta, Ga.
Myers, R. E., R. M. Myers & Co., Inc., Rochester, N. Y.

N

Neumeyer, W. E., Neumeyer & Dimond, 82 Beaver, New York.
Newell, H. T., Jackson Paper Co., Jackson, Miss.
Nicholson, R. W., Van Paper Supply Co., St. Paul, Minn.

O

Olmsted, Mason B., Zellerbach Paper Co., San Francisco, Cal.
Orchard, H. C., Orchard Paper Co., St. Louis, Mo.

P

Parsons, Frank F., F. F. Parsons Paper Co., Washington, D. C.
Platt, H. E., J. L. N. Smythe Co., 30 S. 6th, Philadelphia.
Pratt, D. W., Butler Paper Co., 223 W. Monroe Chicago.
Proctor, Charles T., Proctor Paper Co., Boston.

R

Reeves, B. E., Alling & Cory Co., Rochester, N. Y.
Reeves, Courtney H., Paper Mills Co., 317 S. Wells, Chicago.
Rogers, L. E., Bowes Bros., Inc., Utica, N. Y.
Rosenthal, Nathan, Rosenthal Paper Co., St. Louis, Mo.
Roesch, Henry, Roesch Paper Co., Tampa, Fla.
Ross, Herbert H., Mid-States Gummed Paper Co., Chicago.

S

Saxe, N., Saxe Paper Co., Philadelphia.
Scallaw, T. H., Chatfield & Woods Co., Cincinnati, Ohio.
Schaefer, Wm. N., R. P. Andrews Paper Co., Washington, D. C.
Schlosser, Morris, M. & F. Schlosser Paper Corp., 220 W. 19th, New York.
Schmidt, E. J., Parker, Thomas & Tucker Paper Co., Chicago.
Schuman, Louis, Manhattan Card & Paper Co., 25 Beekman, New York.
Seinsheimer, Walter, Seinsheimer Paper Co., Cincinnati, Ohio.
Selbert, Edwin, Anchor Paper Co., Cincinnati, Ohio.
Severance, H., Hubbs-Howe Co., Buffalo, N. Y.
Shaughnessy, Festus W., St. Louis, Mo.
Shaw, Chas. A., Whitney Bros., Inc., Boston.
Sherill, A. B., Riegel & Co., Philadelphia.
Sherman, John R., Antietam Paper Co., Jacksonville, Fla.
Skinner, Geo. W., Skinner & Co., New York.
Smith, Arthur H., Alling & Cory Co., Pittsburgh, Pa.
Smith, J. K., J. & F. B. Garrett Co., Syracuse, N. Y.
Smith, Jas. L., Chicago Paper Co., Chicago.
Spaulding, C. A., Carpenter Paper Co., Des Moines, Iowa.
Starling, F. W., Seaman-Patrick Co., Detroit, Mich.
St. Clair, W. D., Alling & Cory Co., Pittsburgh, Pa.
Stevens, Albert P., Jr., Industrial Paper Co., Baltimore, Md.
Stevenson, W. B., Storrs & Bement Co., Boston.
Strott, Geo. H., New York Paper Co., Baltimore, Md.
Smythe, T. H. B., J. L. N. Smythe Co., Philadelphia, Pa.
Stuhlreyer, P. A., Diem & Wing Co., Cincinnati, Ohio.
Swigart, John, Swigart Paper Co., Chicago.

T

Tayloe, Geo. G., Tayloe Paper Co., Memphis, Tenn.
Thomas, A. C., F. A. Flinn, Inc., New York.
Tolen, G. R., Midland Paper Co., Chicago.
Tracey, F. Beudel, Ford Hill Paper Co., Boston, Mass.

W

Waite, Clayton T., John Carter & Co., Inc., Boston.
Waite, Harrie E., John Carter & Co., Inc., Boston.
Walter, Simon, S. Walter, Inc., Philadelphia.
Warner, K. S., John F. Sarle Co., Inc., 50 Hudson, New York.
Webb, Geo. S., Storrs & Bement Co., New Haven, Conn.
Weil, Max W., Union Paper & Twine Co., Cleveland, Ohio.
Wellington, Roger H., Alling & Cory Co., Rochester, N. Y.
Wells, Jas. L., Sloan Paper Co., Atlanta, Ga.
Wellhouse, Sidney L., National Paper Co., Atlanta, Ga.
Wetmeyer, A. C., J. E. Linde Paper Co., New York.
Whitaker, Carl C., Cauthorne Paper Co., Richmond, Va.
White, John F., James White Paper Co., Chicago.
Whitney, H. B., Whitney Paper Co., Wichita, Kan.
Wiggins, M. V., Crescent Paper Co., Indianapolis, Ind.
Wilder, C. A., Wilder Bros. Co., Philadelphia.
Wilson, B. W., B. W. Wilson Paper Co., Richmond, Va.
Williams, F. K., Caskie-Dillard Co., Lynchburg, Va.
Winpree, R. E., Bedford Pulp & Paper Co., Richmond, Va.
Wittrock, C. J., Paragon Paper Co., Cincinnati, Ohio.
Wolbrette, Jules, Southern Paper Co., New Orleans, La.
Wolfson, Leon B., Wolfson Paper Co., Columbus, Ohio.

Z

Zellerbach, H. L., Zellerbach Paper Co., San Francisco, Cal.

ROCHESTER HOUSE INCORPORATES

The house of R. M. Myers & Co. has incorporated under the laws of the State of New York. The new company, R. M. Myers & Co., Incorporated, takes over all the entire operating business of the old company. The corporation is capitalized for 2,000 shares of Common Stock par value $100.00 per share.

The officers and directors are as follows: R. E. Myers, president and treasurer; D. F. Teetor, vice president; C. A. Harold, secretary; Bruce F. Hill, director; M. E. Myers, director. R. E. Myers is also managing director of the company.

R. M. Myers & Co., Incorporated, will continue to occupy the seven story building at 27-29 Exchange street.

The late Robert M. Myers became associated with G. N. Hawley in Rochester in 1874, forming he firm of Hawley and Myers, later to become R. M. Myers, then R. M. Myers & Co.

The present officers and directors have long been associated with the firm and are well known to the trade. The present manager, R. E. Myers, succeeded his father as manager in 1914. Mr. Myers is also president of the affiliated younger house of Buffalo Myers Corporation, at Buffalo, N. Y., a director in the following Canadian companies manufacturing and selling paper: The Garden City Paper Mills Company, Canadian Vegetable Parchment Company, Victoria Paper and Twine Company, Anglo-American Paper Company. He holds the position of vice president of the Garden City Paper Company.

R. M. Myers & Co. Incorporated are looking forward to years of steady and healthy growth under their new title and setup.

TULIP CUP FIRM LOSES

Sanitary drinking cups are a novelty, not an invention, Federal Judge Grover M. Moscowitz in Brooklyn said in an opinion handed down February 9 ending the suit of the Tulip Cup Corporation and the U. S. Machine Manufacturing Company of College Park, L. I., against the Ideal Cup Corporation of 168 39th street, Brooklyn.

The cups were originated by Mrs. Harriet Hill, who sold the idea to the Tulip Cup concern. Testimony in the trial showed that as many as 600,000,000 of the cups were made by that organization in a single year, the receipts for which amounted to $1,458,000.

The testimony of experts was introduced to prove that the Ideal company had infringed on the patent rights of the Tulip Cup Corporation in that they allegedly imitated even the boxes in which the cups were sold.

In his opinion Judge Moscowitz found that only mechanical skill was necessary to make the articles and decided in favor of the defendants. The Tulip company's petition for a restraining order was denied.

CHEMICAL AND MECHANICAL PULP

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Hallein and Villach, Austria

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Bergvik och Ala Nya Aktiebolag, Söderhamn, Sweden
Svanö Aktiebolag, Svanö, Sweden
Aktieselskabet Greaker Cellulosefabrik, Greaker, Norway

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Nensjö Cellulosa A.—B., Sprängsviken, Sweden
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Wisconsin Paper Industry in Healthy Condition

Despite Problems of Competition and Markets, Greater Stability Was Reached by Most of the Paper Mills of the Badger State—Practically Every Plant in Wisconsin Is Now Reported to Be on a Good Operating Basis—Important Consolidations Helped to Further Improve Business Conditions—Additional Machines Placed in Some of the Mills in Order to Meet Demands for Increased Production.

Written Especially for the Annual Number of the Paper Trade Journal by Erik L. Madisen

WISCONSIN paper mills, while grappling with problems of competition and markets, reached a greater stability during the last year than they have experienced for some time. Business as a whole was quite satisfactory and the companies that have not been going through a reorganization have reported good showings from the standpoint of operating profit.

This trend toward a stabilized condition is shown principally in the rejuvenation of plants that were down at the heel or defunct. Almost every mill in the state is now on a good operating basis. The American Writing Paper Company's mill at DePere was taken over by the newly organized Nicolet Paper Company, and is back on its feet. The Peshtigo Paper Company, of Peshtigo, has converted the operating deficit of its defunct days into operating profit, and the ability to discount current bills. The Island Paper Company mill at Menasha was converted from idleness to operation by a new company known as the Menasha Paper Mills.

Further improvement of conditions is shown in important mergers of the year. The two largest were the consolidation of the Marathon Paper Mills Company and the Menasha Printing and Carton Company, and the purchase of the Eddy Paper Company by the Kieckhefer Container Company. Several new corporations also have been formed, especially in the carton industry.

There is significance also in the amount of expansion, construction and improvements that have taken place. Additional machines have been placed in some mills to meet demands for increased production. Others have built additional manufacturing units, warehouses, power units or other needed structures. Completion of the Northern Electric Company's twin power houses on the Menominee River was also an important step. The principal expansion outside Wisconsin was the Kimberly-Clark Company's move to enlarge its Spruce Falls Power and Paper Company, Ltd., at Ontario, Canada, and the Consolidated Water Power and Paper Company's completion of a new paper mill at Port Arthur, Ont.

Increased Competition

Print paper mills in Wisconsin have encountered difficulties this last year due to the competition of the growing number of news print mills in Canada, with their ability to produce at low cost. Some have overcome this in part by shifting to higher grades but there is still an unsettled condition in the renewal of sales contracts.

Manufacturers are finding that the establishment of many new mills with wide and swift machines has brought the day of mass production, but with it the outlook for overproduction and glutting of the market. They are now turning their attention to mass distribution, and expect to have an acute problem on their hands unless they can develop a foreign market to consume the surplus print. They report the last year as satisfactory, however, although highly competitive.

Some of the oldest print mills in the state have made a better showing on their profit statements than others because most of their machinery and other physical assets have been written off over a period of years through depreciation. They therefore show a low overhead as compared to mills that have bought expensive new machinery and have a large interest charge to deduct from their profit margins.

Fox River Valley Changes

Changes and expansion have affected the Fox River Valley more than any other section of Wisconsin. The largest of the new corporations were formed there; namely, the Nicolet Paper Company, of DePere, and the Wisconsin Carton Company, Neenah.

Interests headed by William C. Wing, president of the Fox River Paper Company, Appleton, incorporated the former company with a capitalization of 750,000 to purchase the American Writing Paper Company's mill at DePere, Wis. The mill was completely overhauled and now is operating two machines on glassine and grease proof paper. H. K. Babcock and C. B. Clark, of Neenah, also are interested in the project. The manager is Henry C. Hanke, formerly with the Rhinelander Paper Company, Rhinelander, Wis.

Incorporation of the Wisconsin Carton Company took place in July, 1927. The original plan was to take over the plant of the defunct Elm Paper Box Company, Neenah, but early in 1928 the company decided to erect a new factory. A preferred stock issue of $100,000 was added to the former capitalization of $100,000 of common stock, and the abandoned factory site of the Valley Paper Mills, West Menasha, was purchased.

James T. Maeder is largely responsible for formation of this company. He formerly was superintendent of the Menasha Printing and Carton Company's plants at Wausau, Wis., and Baltimore, Md. The other incorporators are Adam Schwartzbauer, Menasha, and Alfred Danke, Neenah.

Other concerns organized in Wisconsin this last year are the Peavey Printing and Paper Company, of Ashland, and the Modette Company, Green Bay. The Ashland concern is a $25,000 corporation whose business is printing, publishing, converting and possibly the manufacture of paper. Incorporators were W. M. Peavey, H. J. Peavey, and Robert G. Reick. The Modette Company is headed by J. M. Conway, Frank T. Ramsay and Eben R. Minahan, Green Bay. It has a capital of 500 shares of common stock with no par value and will buy and sell pulp and paper.

Big Paper Mill Mergers

One big merger made paper mill history in the state when during June of 1927 the Menasha Printing and Carton Company, Menasha, was purchased by the Marathon Paper Mills Company, of Rothschild. The consolidation was effected because the Menasha plant thus could acquire an ideal source of supply, with excellent water power facilities, and the Marathon interests could be assured of a nation wide selling organization. The Marathon is a four machine mill, and the Menasha plant one of the largest of its kind devoted to boxes, labels, wrappers and special color process work.

This deal caused removal of the Menasha company's offices to the Wrigley Building, Chicago, for convenience in sales operation. A change of name also resulted in the case of the Lake Superior Paper Company, of Ashland, owned by the Carton company. It now is the Ashland mill of the Marathon Paper Mills Company.

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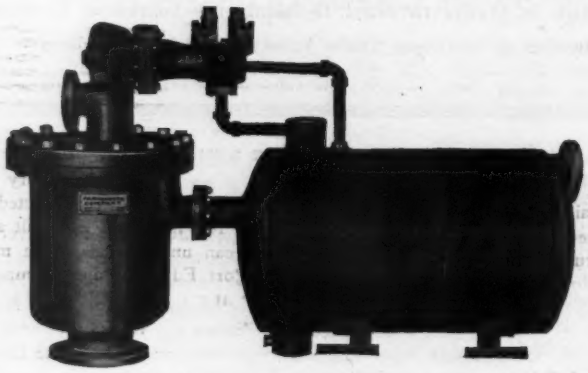

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Another merger running into big figures was consummated early in the summer of 1927 when the Kieckhefer Container Company, Milwaukee, took over the Eddy Paper Company, of Three Rivers, Mich. The deal involved over $3,000,000, and with its plants also at Delair, N. J., Chicago, Ill., Honolulu, Hawaii, Oakland, Calif., and White Pigeon, Mich., the Kieckhefer Company now makes 25 per cent of the entire United States output of solid fiber containers.

Wisconsin Interests Expand in Canada

Canadian expansion by two Wisconsin companies during the year has meant the creation of mammoth new plants. The Kimberly-Clark Company, Neenah, launched a bond issue of $13,000,000 to finance enlargement of the Spruce Falls Power and Paper Company, Ltd., of Ontario, Canada. This enterprise is owned jointly by the Kimberly-Clark Company and the *New York Times* Company.

Among the improvements scheduled were a fifty mile standard gauge railway, fifty miles of power transmission lines, and enlargement of the sulphite mill to a capacity of 230 tons daily. The paper mill also has undergone enlargements so as to give it a capacity of 550 tons of news print daily, and the same is true of the ground wood pulp mill, which was brought up to a capacity of 440 tons. The Spruce corporation has timber rights in Canada of 4,700 square miles, containing not less than 10,500,000 cords.

Completion of a new paper mill at Port Arthur, Ont., last summer comprises the latest expansion by the Consolidated Water Power and Paper Company, Wisconsin Rapids. Its subsidiary across the border is known as the Thunder Bay Paper Company. Work was started on a four machine mill in 1926, and it was finished late in the spring of 1927. Two machines have been installed thus far so that the mill can turn out 250 tons of news print a day. These machines turn out a sheet which trims 230 inches wide and are reputed to be the fastest in existence. Additions and improvements also have been made at the Thunder Bay pulp mill so as to greatly increase its capacity. Financing was accomplished by a bond issue of $7,500,000.

More Wisconsin Paper Mill Developments

Output of corrugated containers in the Fox River Valley has been augmented greatly by a transition on the part of the Menasha Wooden Ware Company, Menasha. This concern was one of the largest producers of wood containers in the United States but has found it wise to line up with the popularity of fiber boxes. A new factory unit of four stories will take care of the new venture, with an average production of six carloads of cartons daily. R. L. LaRue, formerly of Morristown, N. J., has charge of the new plant and the board will be furnished by the John Strange Paper Company and the Menasha Paper Mills, both of Menasha.

Production was started in February, 1927, by the Menasha Paper Mills, Menasha. This is a corporation formed in the fall of 1926 by N. A. Brokaw to take over the defunct Island Paper Company plant. Straw board is its principal product.

Other developments include an increase in capitalization of the Edgewater Paper Company, Menasha, from $50,000 to $100,000. The proceeds are used largely for financing and expansion. Albert G. Gilbert became the principal owner of the Gilbert Paper Company, Menasha, under the terms of the will of his father, the late William M. Gilbert. He acquired 215 shares of common stock, with a par value of $500 a share.

A change of name to the Diana Manufacturing Company was authorized by the Paper Novelty Company, Green Bay. T. E. McGillan, who withdrew last year from the McGillan-Asmuth Paper Mills, Inc., has established the McGillan Mill Supply Company, Menasha. He has become a manufacturer's representative and is marketing equipment, and a line of foreign and domestic pulps.

Two men formerly connected with wire plants at Appleton, have formed the American Wire Cloth Company at Kalamazoo, Mich. They are Frank F. Schmiege, who is president, and George Shinners, secretary and treasurer.

Through a reorganization, the Moloch Machine and Foundry Company, Kaukauna, was able to pay its first dividend this last year, amounting to seven per cent on its preferred stock. The company experienced a fire which ruined its foundry, but the structure was quickly rebuilt. A large volume of orders was booked so that the concern is now in a prosperous condition.

Numerous Wisconsin Mill Improvements

Improvements also have been numerous in Wisconsin mills. A second machine was added by the DePere Paper Manufacturing Company, DePere, enabling the production of 25 tons daily of heavy weight chip board and vat lining. Twenty-five additional men were added. A rag storage warehouse 50 by 130 feet has been added by the Whiting-Plover Paper Company, Stevens Point.

Turbines are housed in a two-story addition 60 by 120 feet at the Consolidated Water Power and Paper Company, Wisconsin Rapids. The expenditure was approximately $85,000. At the Fort Howard Paper Company, Green Bay, a two story addition was built for storage. This company also has constructed a new boiler house with smokestack 193 feet high, and has built a dock on the Fox River so lake boats can unload coal at the mill. Another Green Bay concern, the Port Edward Paper Company, has built an addition 80 by 210 feet at a cost of $85,000. The Diana Paper Company, of that city, also added a factory unit 52 by 55 feet. An addition 50 by 70 feet at the Neenah Paper Company, Neenah, costing $30,000, gives the mill a larger finishing room.

Expenditures of approximately $450,000 are being made by the Western Printing and Lithographing Company, Racine. A new paper goods plant of two and three-story type is being put up to take care of increased business. At Mosinee the Wausau Sulphate Fibre Company built a new mill unit of one story 70 by 110 feet in size. The Marathon Box Company recently was organized at Wausau, with capital of 2,000 shares of no par value. A plant is being established to produce paper containers of all kinds.

Capacity of the sulphite mill of the Rhinelander Paper Company, Rhinelander, has been increased by the addition of a fifteen ton digester. Expenditures of $300,000 also were made to provide a new bleaching system, a water filter, acid recovery system and new wet room facilities. An investment of $576,000 is being made at the present time for improvement of the sulphite mill and for installation of a new paper machine to make glassine, grease-proof paper, bonds and high grade waxing papers.

Enlarged finishing room capacity was needed by the Nekoosa-Edwards Paper Company, resulting in a one story addition 160 by 180 feet in size, costing $160,000. A fourth digester also was added at the Port Edwards sulphite mill, increasing its capacity to 20 tons.

Other enlargements include a finishing department addition 60 by 71 feet at the Riverside Fibre and Paper Company, Appleton; an addition 55 by 180 feet at the Fox River Paper Company, Appleton; a new loom unit costing $18,000 at the Appleton Wire Works, Appleton; a four story warehouse at Manitowoc for Schmidtman Company, wholesalers; a finishing room 60 by 97 feet at the Ashland mill of the Marathon Paper Mills Company; a two story addition costing $60,000 at the Dells Paper and Pulp Company, Eau Claire; a two story addition 61 by 82 feet at the Northern States Power Company, Eau Claire; a storage building 30 by 80 feet at the Moloch Machine and Foundry Company, Kaukauna; a new sawmill of 18,000 feet daily capacity at the Menasha Paper Roll Plug Company, Menasha; a boiler room at the Menasha Printing and Carton Company, Menasha; a beater department and boiler unit at the DePere Manufacturing Company, DePere, costing $30,000, and the installation of a new coating machine by Appleton Coated Paper Company, Appleton.

Considerable construction work also has been in progress at the Kimberly-Clark Company's mill at Kimberly. A new boiler room has been provided. Three new boilers and two additional steam turbines have been added. Much rebuilding also has been neces-

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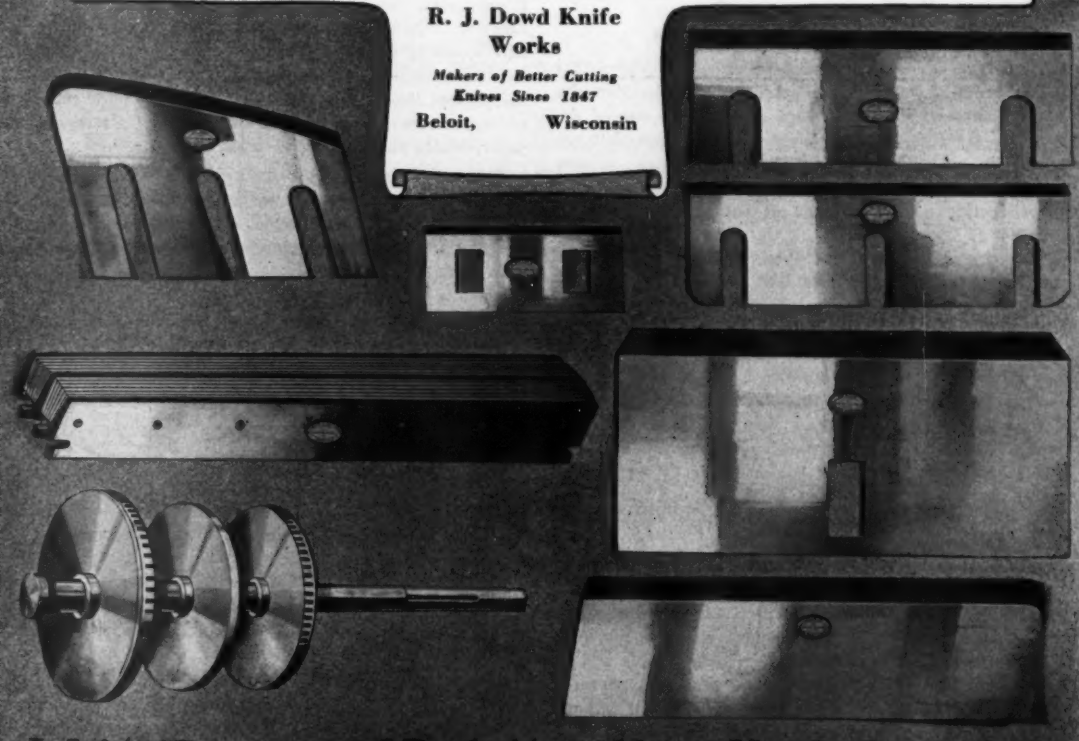

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sary because of a dust explosion and fire, and the collapse of a beater room.

New Power Facilities

Growth and operating efficiency in the industry also are reflected in the new power facilities in various parts of the state. Outstanding in this respect is the $3,000,000 hydro-electric project completed in 1927 by the Northern Paper Mills, Green Bay, Wis., through a newly formed subsidiary, the Northern Electric Company. Twin dams were constructed on the Menominee River at Chalk Hills and White Rapids, near Amberg, Wis. Power houses of attractive architecture were constructed at each dam. One is furnishing 10,000 h.p. to the Northern mills at Green Bay. The output of 10,000 h.p. from the other has been sold to the Milwaukee Electric Railway and Light Company, Milwaukee. The project included construction of a village for employees of the plants, and summer resorts at the newly impounded lakes. A bridge costing $60,000 also was built across the river. The Green Bay mill has given up its steam plant, except for emergencies.

Merger of several utilities by the Byllesby Engineering and Management Company has given mills along the Wisconsin River unlimited power facilities. The consolidation included the Wisconsin Valley Electric Company, the Wisconsin Valley Power Company, the Valley Transit Company, and the Waupaca Electric Service and Railway Company. The Byllesby company is spending $1,500,000 for a high tension line between Green Bay and Stevens Point, connecting the Bayside steam plant of the Wisconsin Public Service Corporation at Green Bay with the Wisconsin River plants. Connections also are given with the Wisconsin Valley Power Company's plant at Chippewa Falls, and with plants at Minneapolis, Minn., and Grand Forks, N. D. Undeveloped power sites of considerable value also are included in the holdings acquired by the Byllesby interests.

One of the oldest utilities serving paper mills, the Wisconsin Traction, Light, Heat and Power Company, Appleton, passed out of existence in 1927 with the formation of the Wisconsin-Michigan Power Company. Merger of several Wisconsin and Michigan utilities of the North American Company resulted in the change. The combined properties are valued at $16,000,000. A bond issue recently was floated totaling $5,000,000.

Among the new dams in this region is one on the Wolf River near Shawano, built by the Wisconsin Power and Light Company, and a new one on the Fox River at Appleton. The latter replaces the old "middle dam" which was obsolete. This power has been used for many years by the Fox River Paper Company, Appleton Machine Company, Valley Iron Works, Appleton Woolen Mills, and others.

A new power house also is being municipally built at Kaukauna, where several mills are served. It will replace an old one and will use the same water power.

Financial Conditions Improve

Financial conditions have shown considerable improvement and cheap money in the loan market has been of help. The Tomahawk Pulp and Paper Company was able to retire $47,000 worth of its 7 per cent mortgage bonds due to good business conditions. Bonds amounting to $52,000 were called for payment by the Marinette and Menominee Paper Company.

Considerable encouragement is shown in the comeback staged by the Peshtigo Paper Company, of Peshtigo. Under the direction of P. M. Allen, receiver-manager, the defunct mill has built up its output from 33 1/3 per cent of its capacity to full production. By efficiency of operation, the overhead has been cut so that the income has been ample to take care of current obligations. The company is able to discount its bills and has a large volume of orders booked.

Disposal of the plant at a receiver's sale was ordered by the court, but this was postponed several times and has not yet been consummated. Two 1500-pound Jones beaters have been added and other improvements have been made so that maximum production was possible. Safety campaigns also have been conducted aggressively, with much satisfaction and saving to the company. Employment is given 175 men, with an approximate payroll of $400,000.

There has been an upward curve in wages in Wisconsin mills. The average per man has increased from $23.97 per week in 1923 to $25.67 in 1927. Some reductions in freight rates have been obtained, especially in the case of the Wausau Sulphate Fibre Company, Wausau. Discriminatory tariffs were adjusted by the Wisconsin Railroad Commission. An excellent showing has been made by the Tomahawk Kraft Paper Company, which enjoyed earnings of $437,000 for 1926.

Conditions in the raw material market have been improved by new Wisconsin legislation. A severance tax takes the place of yearly property taxes on standing timber, and lands set aside for reforestation. Slashing of forests no longer is necessary to prevent their value from being eaten up in taxes. An annual tax of only a few cents an acre is levied, and a severance tax paid when the timber is cut, based on its market valuation at that time. Mill owners therefore are interesting themselves in selective cutting, replanting of cutover lands and other measures which will prevent the pulpwood supply from being used. The mortality of Wisconsin forests otherwise would have been about fifteen years.

Attempts were made by paper interests during the last year to prevent enforcement of the "recapture" clause of the new Wisconsin water power law. Under this measure, all new dams which are built can be acquired by the state at the end of thirty years, upon payment of the valuation at the time they were built. The Fox River Paper Company brought a test suit in connection with rebuilding of the "middle dam" at Appleton, and in a fight carried through local and state courts and the United States Supreme Court, failed to set aside the law. This situation has not appeared to hamper water development, however.

Technical Education and Safety Progress

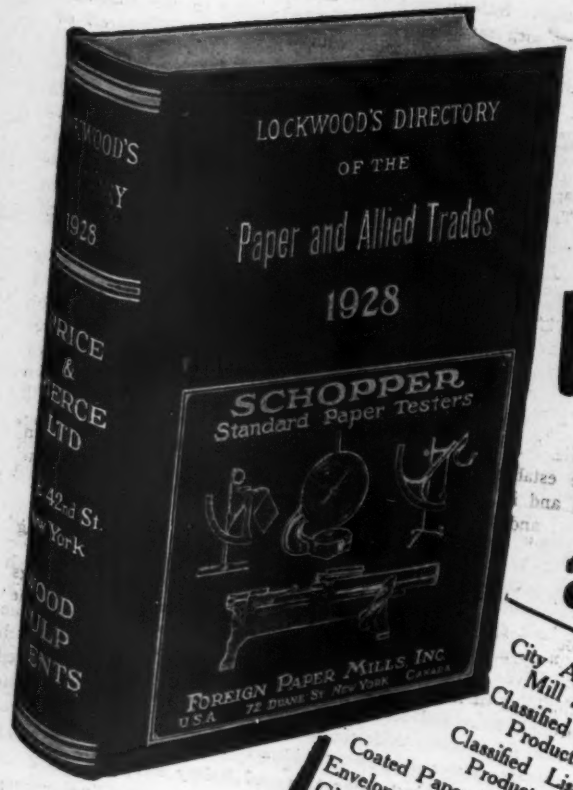
Technical education and safety have made outstanding progress. Night schools started in the Fox River Valley to teach pulp and paper making proved so successful that the movement was extended last fall to every section of the state. H. G. Noyes, working under direction of the state board of vocational education, made surveys in each paper mill center and started classes. Hundreds of employees are taking the courses, either to improve their understanding and working capacity, or to prepare for advancement. Co-operation has been given by the mills, some of which have established extensive education departments of their own.

More mills than ever are undertaking safety campaigns, and the result has been a marked reduction in accidents and fatalities. Industries in the Wisconsin River Valley have arranged for an annual safety conference such as the Fox River Valley has conducted for three years. These are attended by about 1,500 executives, foremen and employees each year and are quite a stimulus.

A safety achievement that stands out as perhaps a world record is credited to the Kimberly-Clark Company's mill at Niagara, Wis. Six hundred employees worked for 284 consecutive days without a lost time accident and almost rounded out a year when one of their number suffered severe burns. The nearest previous record was 209 days.

Losses from Fire and Other Causes

Sympathy of the entire paper industry was turned to the Kimberly-Clark Company when in October of 1927 nine workmen were killed by the collapse from unknown causes of a beater room at its mill at Kimberly. About twenty others were injured but recovered. Operation of the mammoth plant was interrupted for about a week, causing heavy financial loss in addition to the human tragedy. In July the "jinx" also visited this plant, when repair men working on a Sunday caused a dust explosion from a blow torch. The sulphur burning room, the machine shop, laboratory and drafting room, and a part of the office were wrecked. Damage was estimated at $50,000.



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AN APPRECIATION

The annual meeting of the Technical Section of the Canadian Pulp and Paper Association has come and gone, but it has not passed into the realm of forgotten things, as there were many outstanding features connected therewith. All papers read were on subjects vitally interesting to the industry at large. Take for example the paper by Dr. Hibbert on the work of the Department of Cellulose Chemistry; could anything be more clear in showing where research ends and practical application of research results to the industry begins? Again take the paper by Prof. Scarth on "Penetration of Liquids into Wood." Could that subject have been presented in a more complete and acceptable form? The papers by Dr. Bulmer and Mr. Cowan, dealing with different phases of the same subject, were outstanding in that they created an intelligent and animated discussion, the last of which we hope has not yet been heard. All the other papers presented were of high standard and reflect great credit on the programme committee headed by Dr. Campbell of the Abitibi Company.

However, the real object of this article is an appreciation of the work done for the Section by the Chairman who has just retired, A. P. Costigane.

Mr. Costigane is a native born Scotchman, was scientifically trained at Glasgow, and came to us with a fund of engineering and industrial experience that was early recognized in Ontario industrial circles. He was one of the first engineers appointed under the Ontario Workmen's Compensation Act, and in order to take up that position gave up a lucrative consulting engineer's practice in Ontario. Mr. Costigane had studied industrial economics in Europe before coming to Canada, and when he joined the pulp and paper industry in Ontario as Secretary and Engineer of the Safety Association, that experience proved invaluable to the industry.

Mr. Costigane has been a member of the Technical Section for about ten years, and during the whole of that time he has shown a keen interest in the work of the Section. He was one of the original members of the Committee on Education, which was instrumental in producing the text book now in use in the industry and it was due to his efforts in conjunction with Mr. George Williamson of the Strathmore Paper Company that a joint committee on education was formed which included the United States and Canada, and by so doing made it possible for the same course of instruction to be given in the States and Canada simultaneously.

From an ordinary member of the Technical Section, Mr. Costigane was elected to the Council on which he served two years and was then elected vice-chairman, from that he passed into the chair in January, 1927. Mr. Costigane's term of office has, due to his initiative, seen the introduction of greater efficiency in the conducting of the business of the section. He has been responsible for certain inovations, such as the introduction of the incoming chairman at a period of the sessions when the chairman-elect would have a reasonable chance and a good welcome.

Were this the only change made Mr. Costigane would deserve the thanks of the Section, but there were others. In conjunction with Mr. Roy Campbell of Montreal the whole system of reporting and publishing transactions was overhauled, and a new and up to date system introduced. The results of this change was very noticeable at the recent annual meeting. Members were astonished and pleased to find that on the morning following each session a complete report of the previous days' activities was awaiting them, with the request that each member sub-edit his own remarks. This all with the intention that a complete report of the transactions be published and distributed to members within two weeks of the meetings.

The amount of work entailed during the year in order to attain this object is incalculable, but has been undertaken and carried to a cunsumation. This also speaks volumes for Mr. Costigane's organizing ability, but Mr. Costigane modestly gives all the credit to the good fellows who acted on his committees, he himself says he had nothing to do except talk.

JOHN F. ELLIS DEAD

John F. Ellis, who had a long and extensive experience in the paper trade in Canada and was honorary president of the Canadian Paper Trade Association, passed away at his home in Toronto, Ont., on February 19, at the advanced age of 82 years. He was able to attend his office and transact business until a couple of weeks ago.

Mr. Ellis, who was president of Barber-Ellis, Limited, was thoroughly experienced in the paper business, and while he gave most of his time to his large business enterprise he was also interested in every work that had for its end the highest good of the community. He was born in Mount Pleasant, Ont., November 9, 1845, his mother being Janet Carlyle, niece of the famous Thomas Carlyle.

He established the present business with John E. Barber in 1876, and it now has branches at Winnipeg, Calgary and Vancouver, and a manufacturing plant at Brantford. He was managing director from its inception until 1917, when he became president. On July 1, 1926, he was presented with an oil painting of himself on the occasion of the fiftieth anniversary of the firm.

John F. Ellis was identified with many public undertakings through the Canadian Manufacturers' Association, of which he was president from 1898 to 1900, and treasurer in 1917, and with the Board of Trade of the City of Toronto, of which he was president, 1902, 1903 and 1904. He was a delegate to the Sixth Imperial Trade Congress in London, England, in July, 1906, and during that visit to Britain was presented to King Edward.

He was president of the National Club in 1901 and 1902, and one of the founders of the Commercial Travellers' Association of Canada. He was also president of the Toronto branch of the Ontario Fish and Game Protective Association. For some years he was also a director of the Crown Life Insurance Company. Besides the National, he had club affiliations with the Granite, the R. C. Y. C., and Caledon and Brantford.

MARVELLUM CO. ACQUIRES MILL

The property of the Whitmore Manufacturing Company, makers of glazed paper, at the southwest corner of Canal and Appleton streets, Holyoke, Mass., was conveyed by Russell L. Davenport as receiver to the Marvellum Company, manufacturers of decorative paper specialties, also of Holyoke, in papers filed in the registry of deeds at Springfield, February 8. The sale was by virtue of an order issued in the superior court at Springfield on January 18, when the petition of the receiver for permission to sell was granted. The buyer assumes two mortgages totaling $100,000.

Although the Marvellum Company has not as yet taken occupancy of the plant, machinery is being installed and it is expected that the work will be completed shortly. The Marvellum Company is adding a coating department, which will enable it to put a glazed coat on paper as desired, such as was done by the Whitmore concern.

Former Marshal James F. Bartley has been appointed superintendent of the coating department.

FOX RIVER VALLEY SAFETY MEETING

Glenn Frank, president of the University of Wisconsin, will deliver the main address at the fourth annual Fox River Valley Safety Conference, according to arrangements announced by the committee in charge. The conference will be held at Oshkosh, Wis., in June.

A divisional meeting for paper mill officials and employees will be included in the plans for the one day session at which about 1,500 will be present.

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THE YEAR IN PAPER

The series of resumes of the various paper markets presented in this Annual Review Number of the PAPER TRADE JOURNAL, furnish a reliable and very interesting cross section of the paper making business in this country and Canada. The reviews have been specially prepared by representative men in their particular branches of the industry, who understand their markets thoroughly, and who have not hesitated to tell the plain truth about the facts that have come under their observation throughout the year. There is nothing really depressing about the situation as it is described, but the facts do seem to indicate that a certain amount of prudence ought at this particular time to be coupled with business enterprise.

The year has been another very busy one in most branches of the industry. Profits, however, in many instances, have been less satisfactory than business may reasonably expect on its capitalization. This is accounted for probably largely by the fact that machine capacity has shown a pretty large increase during the past year, being 23 per cent as compared with 19 per cent in 1926, and being the largest increase in over-machine capacity since 1921 when it amounted to 38 per cent.

The most spectacular developments of the year occurred in the Pacific Northwest. The potential pulp and paper making possibilities of this region have started to be developed almost magically into actualities and give promise of making this country one of the most important paper making centers of the North American continent. Competent authorities assert that surprising as the new enterprises that have been developed in this section have been during the past twelve months, they are likely to be surpassed by developments already in sight for the coming year.

The year has been a very active one especially in news print, and as foreshadowed for some time past, Canada definitely surpassed the United States in the production of this particular variety of paper, and, in fact, established herself as the leading producer of news print in the world. Some half dozen great new mills came into production during the year and added more than 1,600 tons daily to the productive capacity of the mills. A number of additional new mills will begin operation this year and this, with the addition of new machines to mills already existing, will again considerably increase the tonnage. To meet this situation there have been several more than usually important consolidations and others are in sight with the prospects, it is said, of having the entire industry of the Dominion soon under the control of several great corporations.

An abnormal increase in the machine capacity in the book division of the market unstabilized prices and was responsible for a rather unsatisfactory year. Mills, it is estimated, were able to operate only to about 80 per cent capacity in meeting consumption demands. Four new machines, it is said, will come into production this year with an estimated capacity of 140 tons daily. This will make a big increase in production, but as the prospects for 1928 are much brighter, it is possible that consumption will show a considerable increase, although not so great as to enable mills to operate at nearly capacity.

Consumption showed a normal increase in wrapping paper, but production increased at a more rapid rate and produced a generally unsatisfactory situation. Merchandising methods attempted in the interest of stimulating demand were, in a number of instances, ill-advised, and added to the unsatisfactory situation in place of being helpful. Job lots at attractive prices found their way into the market and led one esteemed authority to remark of this situation, "Job lots, like charity, apparently cover a multitude of sins." Considerable additional tonnage is due on the market this year, but with more intelligent merchandising methods, it would seem that in spite of this expansion in production, considerable improvement could be effected in kraft and wrapping generally.

The board market was also harassed by the common evil of over-production, although there probably was an improvement in this respect over recent years. The Paperboard Industries Association, officered by intelligent and competent executives, has done some decidedly worth while work in the way of educating its members to operate their mills on a sane basis and while there is apparently still room for improvement, the situation in the board business is better now than it was only a short time ago, and gives promise of increasing improvement.

Fine papers started the year well, but like most other divisions of the paper market, suffered a recession in demand as the year grew to a conclusion. The total volume of business, however, for the year was higher than the preceding year. In fact, the tonnage of writing paper sold in 1927 was 5 per cent greater than 1926; cover paper 2½ per cent greater, and tissue paper 3 per cent greater than in the preceding year. The prospects for the ensuing year in fine papers are favorable because, while production is likely to increase, consumption is expected to grow proportionately at least.

The outlook for the paper industry, as a whole, is believed to be fairly encouraging for the coming year. From the character of the buying for a number of years past, which has been limited usually to meet immediate requirements, it is judged that there is no back log of stocks anywhere. This is obviously a healthy condition and it almost certainly means that when general business gathers the fresh momentum that is already in sight, the paper business cannot fail to be favorably influenced. Among the greater industries, steel especially is already showing a resumption of normal activities. Evidences of great activity in most other lines, while less apparent, are unmistakable and soon it seems fair to assume that a "comfortable prosperity" will exist all around, in which the paper industry is, of course, bound to share.

BETTER BUSINESS INDEXES ADVOCATED

The *Weekly Business Review* of the American Paper and Pulp Association recently contained an article written by Mr. Paul S. Hanway, entitled "General Business Indexes." In this article it was suggested that the Department of Commerce might cooperate with all industries in obtaining the current data of each industry in a form which would be comparable with the same data of other industries. In interviews with many leading executives and economists, both Dr. H. P. Baker and Mr. Hanway found evidence of this mood and a desire for improved business reports.

The American Paper and Pulp Association communicated with Mr. Hoover, Secretary of Commerce, who in turn requested Mr. M. B. Lane, editor of the Survey of *Current Business*, to investigate the possibilities of such a program. In November Mr. Hanway went to Washington and laid before Mr. Lane and others a general plan of procedure. Dr. F. M. Surface, of the Department of Commerce, and others gave their encouragement and active assistance.

An interview with Mr. Hoover was arranged and Mr. Hanway explained fully the possibilities of such an improved method of reporting business data and its probable benefits to all types of business throughout the United States. He reviewed the investigations already made and the general feeling of agreement as to the need for such a change as evidenced by the response received and made the suggestion to Mr. Hoover, that the Secretary appoint a committee of outstanding governmental and other economists and trade association executives and that this committee meet in Washington in the near future to outline a specific plan of procedure. Mr. Hoover was considerably interested in the matter and requested Dr. Surface and Mr. Lane to consider the development of a program of procedure which would then be presented to the Secretary as a tentative schedule of procedure.

In furtherance of the movement an informal meeting in New York was called by the Department of Commerce upon the request of the American Paper and Pulp Association, February 17. The following were present: Mr. Paul S. Hanway, American Paper and Pulp Association; Dr. L. H. Haney, Economist, New York University; Mr. Ray Vance, Economist; Dr. Virgil Jordan, National Industrial Conference Board; Mr. W. L. Chandler, Secretary National Association of Purchasing Agents; Mr. E. W. McCullough, U. S. Chamber of Commerce, and Dr. Mortimer B. Lane, Department of Commerce.

At this meeting the whole statistical structure was openly discussed. Recommendations were made to obtain reports on standard basis from all industries. Present statistics from many large industries are entirely lacking and it is impossible to obtain sufficient data regarding general business to formulate an index which is dependable. Under the new plan it is hoped that general business may be able to determine future trends of consumption, production, stocks, employment, etc., in a manner of real value to the business executive.

BAG MEN TO HOLD CONFERENCE

The Metropolitan Bag and Paper Jobbers' Association, Inc., will hold its Annual Conference and Banquet on Thursday, March 8, 1928, at the Hotel St. George, Brooklyn, N. Y. This will be the eleventh birthday of the association and the following schedule of events has been arranged for the occasion. 1-2 P. M., Luncheon; 2-3:30 P. M., Merchandise exhibition; 3:30-5:30 P. M., Conference and forum; 5:30-7 P. M., Recess; 7 P. M., Banquet and dance.

At the conference in the afternoon an interesting and instructive program has been arranged. The following men are expected to address the conference: N. A. Schoenbucher, Secretary of the National Paper Trade Association of the United States; Earle Hodges, General Manager of H. L. Dougherty & Co.; Hon. J. Harry Tiernan, Justice of the County Court of Richmond County; Ralph Jonas, President of the Brooklyn Chamber of Commerce.

An unusual program of entertainment has been arranged for the banquet. Departing from their usual custom, this banquet will be attended by both ladies and gentlemen.

Hon. Herbert Hoover, Secretary of Commerce, and also Hon. Ogden L. Mills, Under-Secretary of the Treasury, have been invited as the guests of honor, and are expected to deliver addresses at the banquet.

The Association has arranged to allot a table about six feet in length, to each manufacturing concern applying therefor, for the purpose of exhibiting its products. Each manufacturer will have full charge of its own table and as to what it may display thereon, it being required, however, that no prices be quoted or other solicitation of business be conducted.

In order to maintain uniformity of style display, no special construction of booths or other devices will be provided or approved. It is the purpose of the merchandise exhibit to afford the opportunity to the manufacturers to fully acquaint the jobbers in the Metropolitan District with the products which they manufacture.

It is the hope of the Association that this conference, exhibit and banquet, will assist materially in developing a better understanding and good fellowship between manufacturers and jobbers.

The entertainment committee of the Association has left no stone unturned in making this affair a land-mark in the history of the Metropolitan Association. They earnestly solicit the cooperation of the industry at large.

The committee is composed of the following: George W. Batz, Chairman; Thomas J. Nagle, President of the Association; Nelson Berger, of Forbes Paper Co.; Samuel Fishman, of Finkel Paper Co.; Louis Silfen, of B. Silfen, Inc.; Charles Norz; J. S. Barshay, Counsel for the Association.

SUPERINTENDENTS TO MEET MARCH 16

Plans are progressing very satisfactorily for the superintendents convention of the Southeastern Division of the American Pulp and Paper Mill Superintendents' Association, to be held at Lynchburg and Big Island, Va., Friday and Saturday, March 16 and 17. A central meeting point and one that is easily accessible to all the members as well as others outside of the division has been chosen.

The Virginian Hotel will be headquarters for this meeting. Friday will be devoted to the reading of papers, election of officers, and any other business that might come up in the division.

Saturday will be a day of recreation. The properties of the Bedford Pulp and Paper Company will be inspected and a drive up the beautiful and historic valley of Virginia will be taken. Natural Bridge, one of the seven wonders of the world, will be visited and luncheon will be taken there Saturday, at the Natural Bridge Hotel.

William Brydges, superintendent of the Bedford Pulp and Paper Company, is chairman on arrangements and wishes to emphasize the fact that ladies are invited to attend this convention. Ample provision is being made for their entertainment and every superintendent should plan to bring his wife along if possible.

TO SPEAK ON SEADROMES

Edward R. Armstrong is to speak on "Seadromes for North Atlantic Airways" at the annual dinner of the Boston Paper Trade Association at the Algonquin Club, March 21. There is a possibility that Gov. Fuller will also address the gathering.

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Short Center Drives Pay Well

Belt, Chain and Rope

Modernizing of the pulp and paper mill has necessitated radical changes in the methods employed for the mechanical transmission of power. Floor space is far too valuable for the accommodation of long belt and rope drives; speed ratios are now frequently too great for open drives, if the cheaper and more efficient high speed motors are employed; belting and other transmission bands cost too much to be used extravagantly, as do also the slower speed driving units which might otherwise be used to minimize speed reduction ratios; and power is altogether too costly to be transmitted except with extremely high efficiency. These are a few of the reasons why short center drives, be they belt, chain or rope, have been so extensively adopted by the progressive mills and why they pay so well. They cost less, frequently in the matter of investment and invariably in the long run, are highly efficient, conserve power and reduce upkeep expenses.

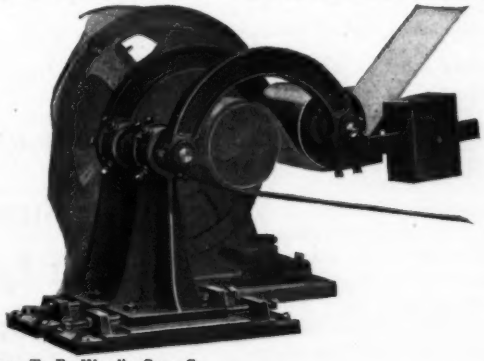
Approved short center drives, employing either belts, chains or ropes as the actuating band, transmit power at an efficiency well over 98 per cent, in some cases over 99 per cent, and possess that flexibility and that resilient characteristic essential for starting

Courtesy: F. L. Smidth Co.

FIG. 2

Seven 100 H.P. Double Headed Motors Drive Fourteen Beaters Through Short Center Belt Drives.—Spaulding Fibre Co.

without undue effort under heavy load and for withstanding the shocks of suddenly applied loads. In other words, they possess the capacity of transmitting power more efficiently than ordinary gearing and in this respect are on a par with the most efficient varieties of accurately cut gearing, avoiding the rigidity of a gear train and substituting more the flexibility of a slipless open belt drive. This all important characteristic of high efficiency under all operating situations common to the modern, approved, short center drives is presented in this collective manner to draw attention to the fact that there are at least three ways of transmitting power mechanically with high efficiency and effectively, the relative merits of which are so nearly on a par that the conditions under which the drives are called upon to function, cost considerations, questions of expediency and other factors of local rather than general moment have to be taken into account when adopting any one. The balance of this discussion, consequently, will consist of brief remarks and numerous illustrations to show how these various types of short center drives are today effecting substantial economies in pulp and paper mill operation. The three general types will be taken up in the order in which they have been mentioned, belt, chain and rope, for no better reason than that it is in this order that the means of transmitting power mechanically is very apt to present itself to the mill.



Courtesy: T. B. Wood's Sons Co.

FIG. 1

Counterweighted Idler Pulley Mounted on Swing Frame Snubs Belt About Smaller Drive Pulley.

Short Center Belt Drives

To understand the principles governing the high efficiency of these various types of drives, however, the fact must be appreciated that the transmission of power from the driving to the driven member is measurable, provided there is no slippage, by the difference in the tension in the tight and slack runs of the transmitting band, whether belt, chain or rope. In the belt drive, the resistance to slippage is measured by the frictional opposition to the sliding of the belt upon the pulley surface and this in turn is measurable by the arc embraced by the wrap of the belt about the pulley, whether it is the driving or the driven pulley.

Obviously, then, the full capacity of any such mechanical tension drive is attained under the conditions of maximum difference of tension in the tight slack runs of the belt (effective driving tension) and of pulley wrap sufficient to provide that frictional

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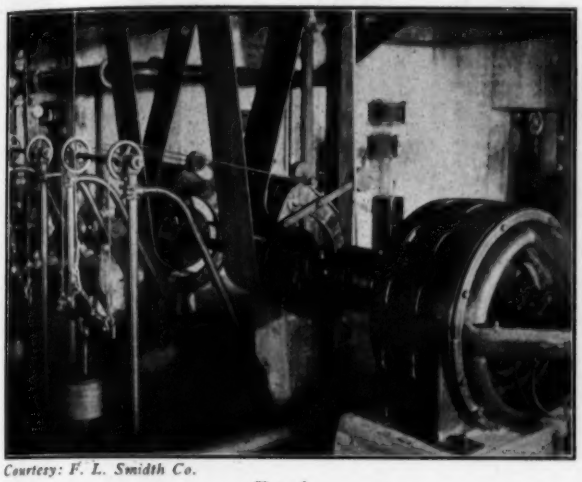
resistance to belt slippage which equalizes the effective driving tension on the belt. Obviously, also, the greater the difference in the diameters of the driving and driven pulleys, the larger the speed ratio, the greater also must be the arc of belt wrap about the smaller pulley, in order to develop the frictional resistance to belt slippage which equalizes the effective driving tension of the belt. Lastly, the most efficient effective driving tension is realized when the tension in the slack belt run is as low as feasible.

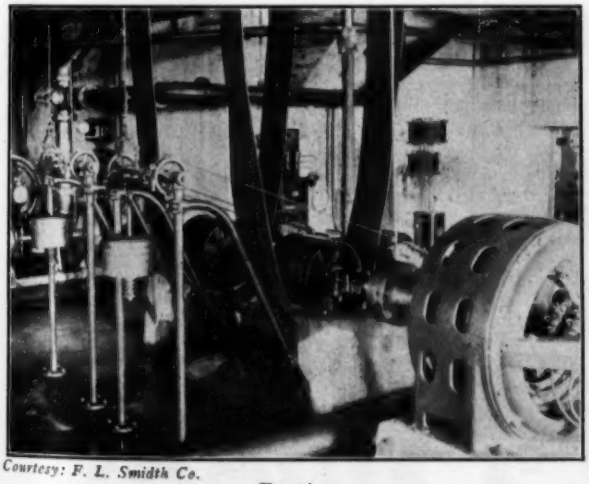


Courtesy: F. L. Smidth Co.

FIG. 3

Vertical Short Center Belt Drives Engaging Beaters.—Manistique Pulp & Paper Co.

This sensitive and somewhat complex balance is secured in the approved forms of short center belt drives by increasing the normal belt wrap by means of a free running, counterweighted, idler pulley mounted in a swinging frame in such manner that the idler, or contact, pulley snubs the driving belt about the smaller drive pulley. This counterweighted, swinging frame construction is resorted to in order to maintain a uniform and constant tension in the slack belt run and so that the arc of belt contact about the smaller drive pulley may adjust itself automatically to variations in power demand.

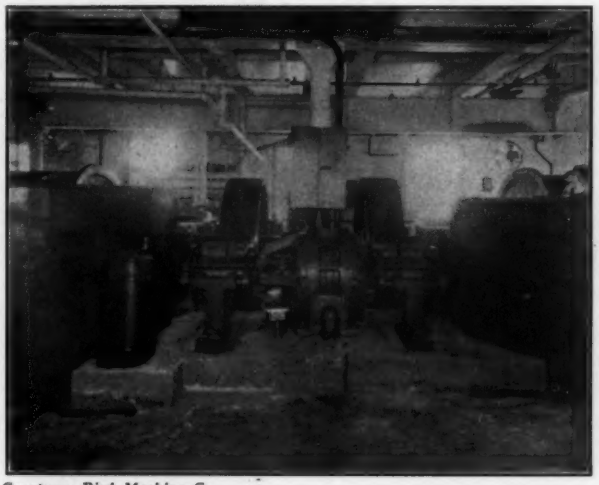


Courtesy: F. L. Smidth Co.

FIG. 4

Vertical Short Center Drives Disengaged from Beaters.—Manistique Pulp & Paper Co.

As the load comes on the drive, for instance, and the inertia of rest has to be overcome, or the load picked-up, the pull in the tight belt run is abnormally high for the moment and the idler pulley instantly advances and increases the arc of belt wrap, to meet the augmented effective pull on the driving belt and balance it by increased frictional resistance to belt slippage. As rapidly as the load is picked-up and the pull is reduced from that of load starting to that of load running, the idler recedes, the arc of belt wrap shortens and the normal effective driving tension for the load is established. Any variation in load, up or down, is accompanied by an advance or recession of the idler pulley, the drive adjusting itself instantly to each demand, its relative position at each instant being established by the effort exerted by the drive.

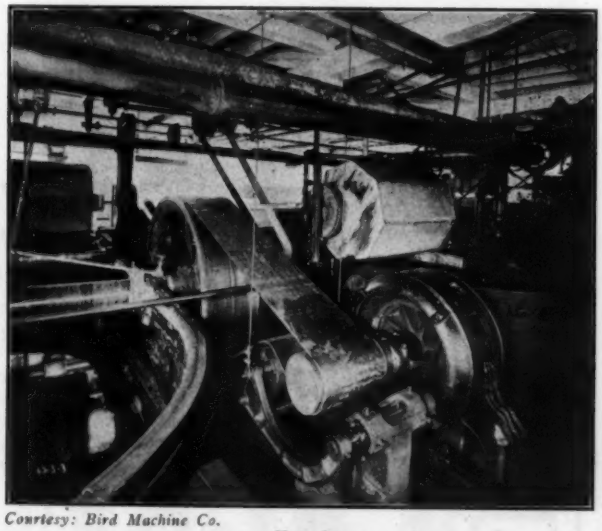


Courtesy: Bird Machine Co.

FIG. 5

Double Ended Motor With Short Center Belt Drives.—Beckett Paper Co.

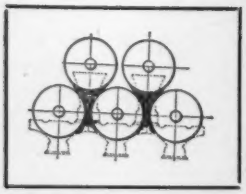
This automatic "elasticity" of the drive makes it exceedingly adaptable to some of the most exacting drive services in paper making, for example, to driving the all important beaters, the economical and satisfactory operation of which constitute vital considerations in paper making. A beater is cursed with an exceedingly high starting torque, requiring the use of driving motors with large overload capacities or of oversized motors which are often operated at fractional load with poor efficiency and low power factor. To remedy such an unsatisfactory situation, it is now quite common practice to install the beaters in pairs and drive the two by a single double headed motor having a capacity slightly in excess of the combined full load demand of the two beaters. This, of course, is a big step forward, but when open belt drives are employed it is found extremely difficult to obtain two driving belts of exactly the same length and even more difficult



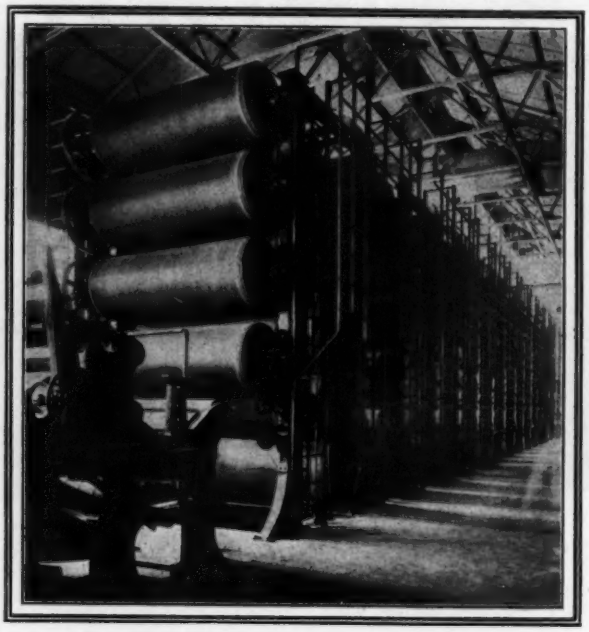
Courtesy: Bird Machine Co.

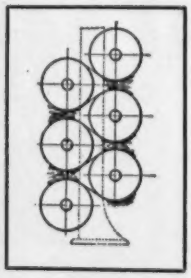
FIG. 6

Short Center Belt Drive On Beater.—Bird & Son, Inc.



Moisture is trapped in this dryer, delaying drying, increasing costs, and lowering quality.





Moisture escapes readily from the Vertical Dryer. Faster drying, fuel saving, and better paper result.

Increase Production without Increasing Floor Space

THE problem of increasing production to satisfy the demand for more paper at reduced conversion costs is one that faces many mills.

Increased production at the wet end, however, necessitates a corresponding increase in the dryer capacity. Ordinarily this means a larger building at enormous expense.

With Vertical Dryers you can eat your cake and have it, too. They necessitate no larger buildings, because they build up instead of lengthwise and give you increased capacity in the same amount of floor space occupied by the old double deck frames. For instance in an installation of Vertical Dryers made for the Franklin Board and Paper Co. of Franklin, Ohio, we increased the capacity of the machine from six vats and eighty-six dryers to seven vats and one hundred and thirty-eight dryers without lengthening the machine a single foot.

The advantage of Vertical Dryers is a plus one—they give you increased capacity and at a tremendous saving of coal and steam. The Vertical principle eliminates the vapor pockets which retard drying—the sheet is more uniformly dried with less steam.

Why not hear the entire story? More than thirty-five mills have found it an interesting one to listen to and then to follow.

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Export Offices: 15 Park Row, New York City

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Patentees and sole builders of Vertical Dryers
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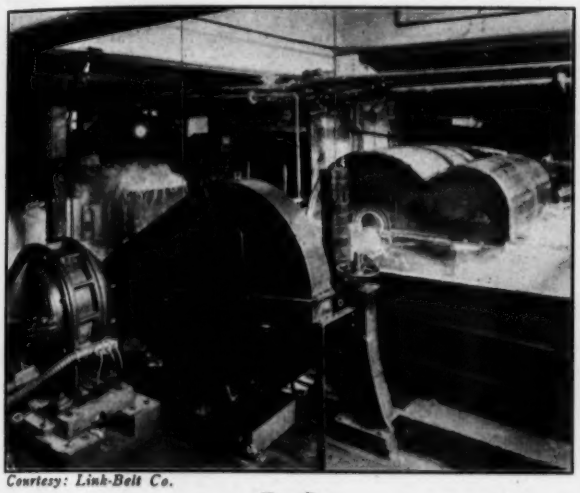
BLACK-CLAWSON

VERTICAL DRYERS

Built with Machine-Tool Accuracy

to maintain such relation in service. The result of even a slight variation in the two belts of open drives is a much more marked disparity in the efficiency with which the two beaters function. Short center belt drives with their characteristic of automatically maintaining the most effective driving tension under all conditions of load, however, virtually eliminate such troubles and are deservedly popular for such purposes. The fourteen beaters at the Spaulding Fibre Company, Tonawanda, N. Y., for example, are driven by seven 100-horsepower double-headed motors through such drives.

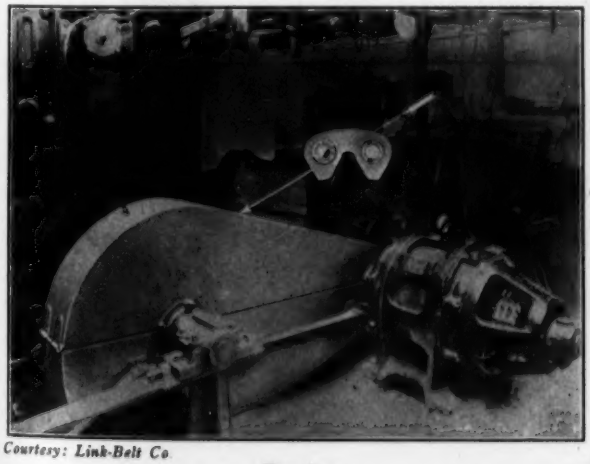


Courtesy: Link-Belt Co.

FIG. 7

Short Center Silent Chain Drive Operating Beaters.—W. C. Hamilton & Sons.

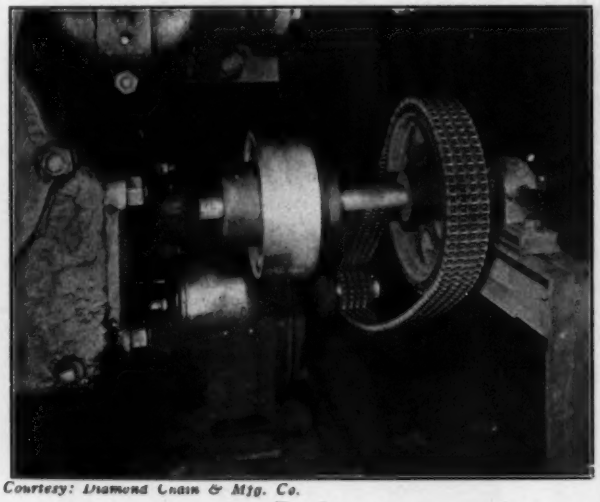
Many other mills employ similar arrangements, using either individual or double-head motor drives, for, aside from the satisfactory operation of the beaters which the drives insure, the arrangement is exceedingly compact and conserves much floor space. With such drives, in fact, the beaters may readily be located in convenient rows with clear aisle spaces between, the short center belt drive, even of the horizontal type, not extending beyond the limits of the beater trough. In a number of the more recent installations, a vertical type of short center belt drive has been installed, removing a good part of all the driving equipment from the beater floor. The motor with an extended shaft carrying one of more driving pulleys is customarily located on a lower level the driving belt alone extending up into the beater room to pass around the beater drive pulley. The control equipment is located conveniently near the beater and the manipulation of the swinging idler contact pulley serves as a starting and stopping device. By simply lifting the idler pulley from contact with the drive belt, raising the weight holding the idler pulley in belt contact, the belt swings clear from the driving pulley and no power is transmitted to the beater. Lowering the counterweight throws the idler pulley against the drive belt, snubs it about the driving pulley and automatically establishes the effective driving tension on the belt.



Courtesy: Link-Belt Co.

FIG. 8

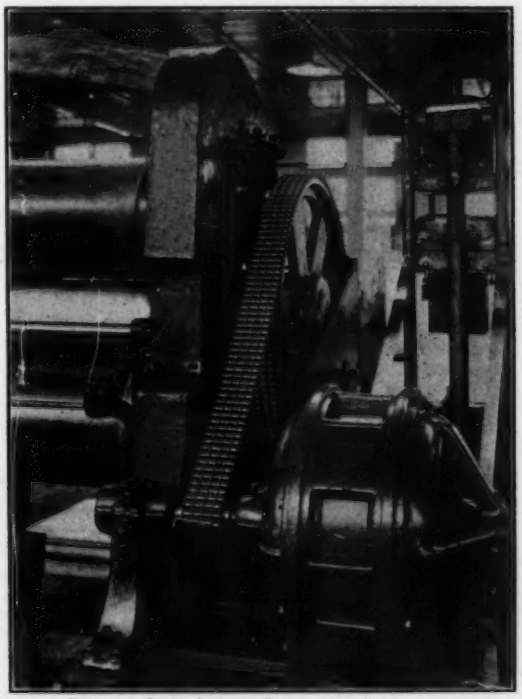
Short Center Silent Chain Drive Operating Super-Calender Machine.—Kalamazoo Paper Co.



Courtesy: Diamond Chain & Mfg. Co.

FIG. 9

Short Center Roller Chain Drive Operating Ram Mechanism of Automatic Stoker.



Courtesy: Diamond Chain & Mfg. Co.

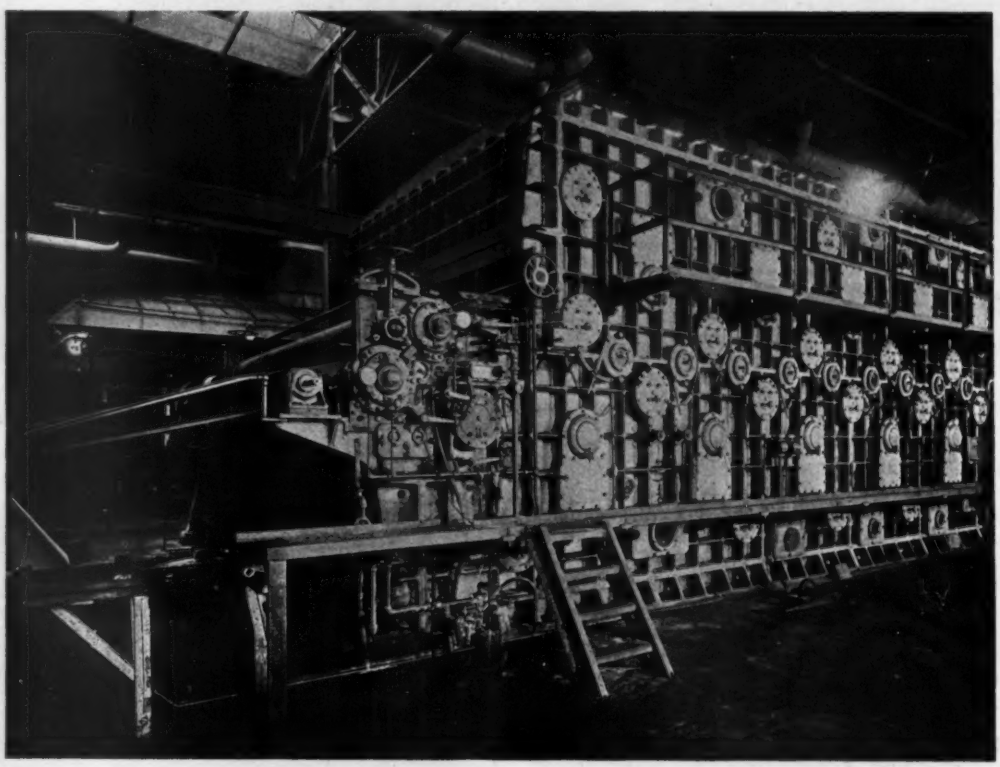
FIG. 10

Short Center Roller Chain Drive Operating Three-Roll Calender.

The short center belt drive is well suited to many other service applications as well, heavy duty and light, and particularly the former. In main engine drives, it is particularly effective in conserving space and in the efficient transference of power, speed

Minton Vacuum Paper Machine Dryer

A new and improved method of drying paper of ALL KINDS in which paper is dried under a high vacuum (28" Mercury)



The above cut shows a Vacuum Dryer installed on a 156" paper machine in the mill of Price Bros. & Co., Ltd., at Kenogami, P. Q., Canada. This installation was made in Dec. 1926. It has been in commercial operation for a long time drying standard news paper at a speed of 700 ft. per min. It has been subjected to every possible test for economy of steam, for freedom from mechanical troubles, for quality of paper produced, and for general machine efficiency. That it has passed all such tests is shown by the fact that

PRICE BROS. & CO., LTD., HAVE NOW SPECIFIED VACUUM DRYERS FOR TWO NEW 234" PAPER MACHINES

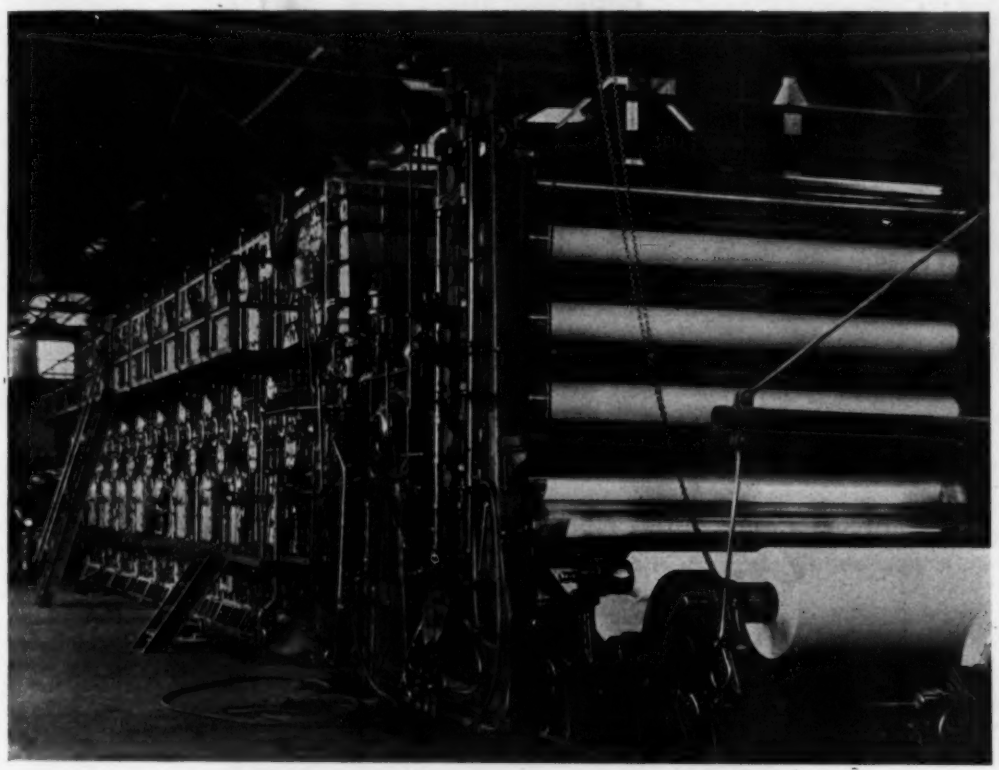
These new Vacuum Dryers will contain engineering features far in advance of present practice. They are being designed for a speed of 1200 ft. per min. They will be only half as long as a standard dryer of equal capacity. The problem of ventilating the machine room has been practically eliminated.

The economy of steam, floor space, felts, etc., heretofore claimed for the Vacuum Dryer have been absolutely proved by the Vacuum Dryer now installed.

Tests have shown that the Vacuum Dryer actually uses less steam than is theoretically needed by the standard bank of dryers to evaporate the water from the paper.

Minton Vacuum Paper Machine Dryer

Marks an Improvement in the Art of Paper Making Second Only to the Advent of the Fourdrinier Paper Machine Itself.



The above cut shows the dry end of the Vacuum Dryer shown on the opposite page.

The Vacuum Dryer is applicable to the drying of any kind of paper. Tub sized papers Vacuum Dried are in every particular the equivalent or better than loft dried paper. The paper is dried in reels and can be cut to suit the order. Large savings can be shown over loft drying.

Where the capacity of a paper machine is limited because of floor space, a Vacuum Dryer can be substituted for the standard bank of dryers and the speed and production of the paper machine doubled. In many cases sufficient steam will be saved to dry the additional paper.

Economies of operation have now been proved sufficient to warrant replacing the old type of drying equipment with Vacuum Dryers.

Paper makers are earnestly requested to look over their old equipment and determine for themselves if it will not pay to replace their dryers with Vacuum Dryers.

ENQUIRIES SOLICITED

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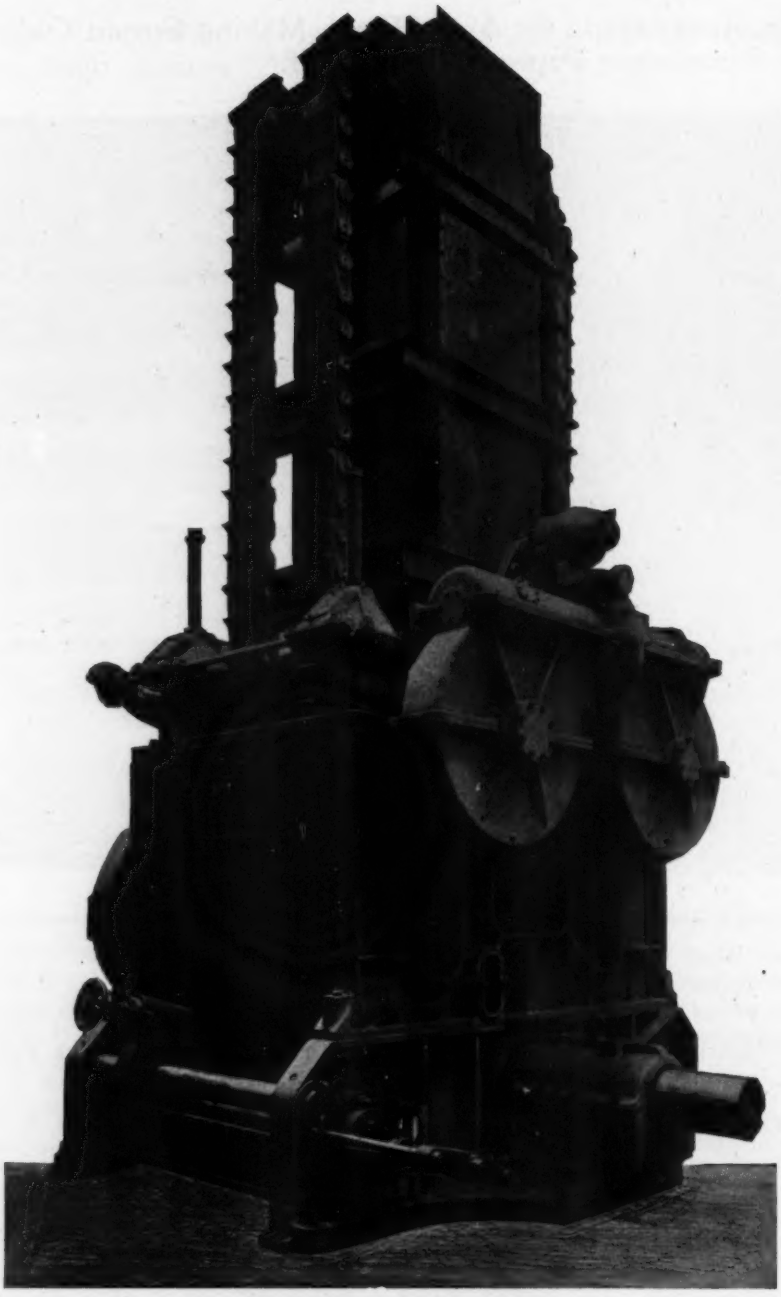
The VOITH-WARREN GRINDER



AMERICAN VOITH CONTACT COMPANY, Inc.

280 Madison Ave. **New York City**

ratios upward of 10 to 1 being readily secured. The principle of maintaining the most efficient effective driving tension is also applicable to quarter-turn belt drives, while another of the applications of the short center belt drive, demonstrating its value in exacting high plant efficiencies, is in that which has been

Courtesy: Allis-Chalmers Mfg. Co.

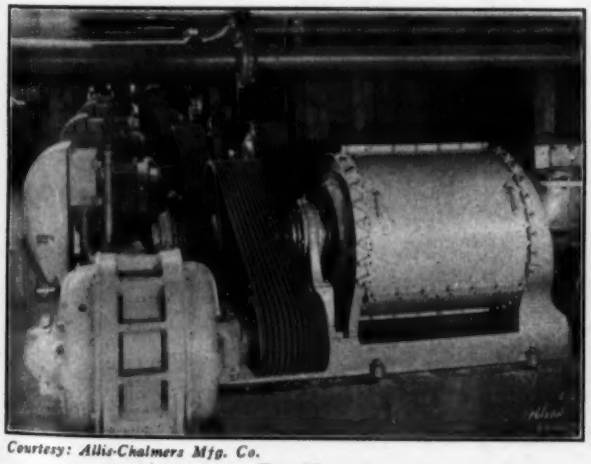
FIG. 11

Short Center Rope Drive Operating Biffer Refiner.—Longview Fibre Co.

termed "rider belt drive" service. In this arrangement, a short center drive is installed within an open belt drive and, not only makes effective use of an excess power supply, but betters the efficiency of the open drive by increasing the frictional grip of the open belt on the pulley in common service.

Short Center Chain Drives

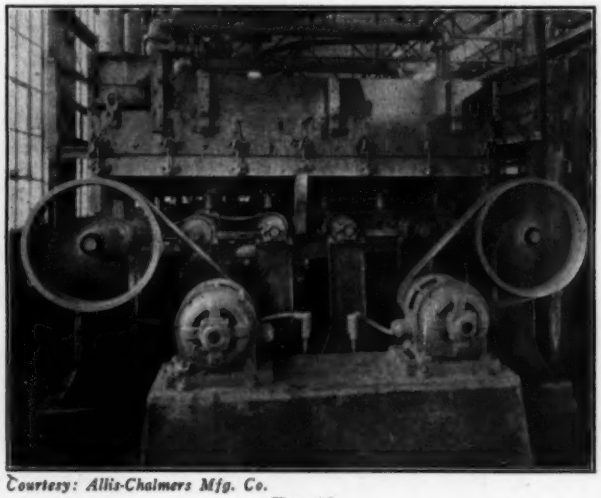
The principles underlying the operation of short center chain drives, of which perhaps those of the so-called silent chain type are considered the most interesting, do not really differ in effect from those governing the behavior of short center belt drives, the same sensitive balance of effective driving tension being involved. The frictional resistance to the slippage of belt, secured by suitably proportioning the arc of contact between belt and pulley, is, in chain drives, replaced by the positive resistance of sprocket, or wheel, teeth acting against the contacting links of the chain. The positive action of spur gearing is secured, with the important difference that instead of the arc of functioning contact being limited to that embracing one or two teeth, as in the case of a gear train, all of the chain sprocket teeth included within the wrap of the chain about the wheels are brought into service in transmitting power, the load being distributed between the comparatively large number of teeth instead of being concentrated upon an individual tooth or two. The effect is the elimination of any shock of impact, smooth, positive action and less wear on all contacting parts.



Courtesy: Allis-Chalmers Mfg. Co.

FIG. 12

Short Center Rope Drives Operating Bird Screens.—Longview Fibre Co.



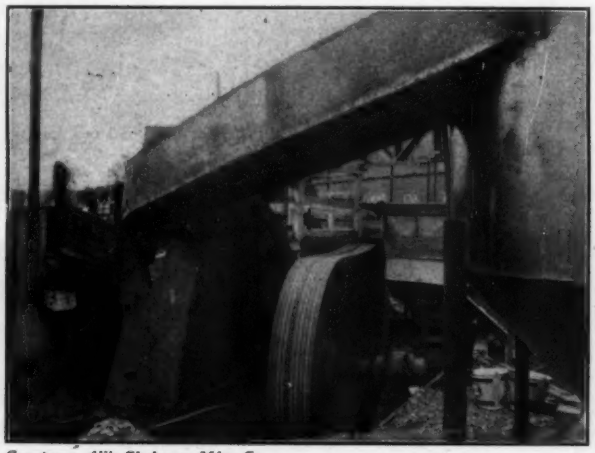
Courtesy: Allis-Chalmers Mfg. Co.

FIG. 13

Short Center Rope Drives Actuating Plate Screens.—Longview Fibre Co.

The chains, for the high efficiency of these drives, are extremely flexible, consisting in silent chains of a series of leaves or plates linked and pinned together so as to permit the greatest possible freedom of action, and provide the "elasticity" essential for the safe accommodation of suddenly applied loads and for the smooth assimilation of sharp fluctuations in power demand. They cannot slip, so are positive in action, are not noisy in operation and being run slack do not create excessive bearing friction on the wheel journals.

The drives can be run at moderately high speeds, up to 2,500 feet per minute, give positive velocity ratios and may be employed satisfactorily for speed ratios up to 15 to 1. These characteristics make them efficient and suitable transmitters of power to beaters, washers, cookers, calenders, fans, Jordans, pumps and similar equipment about the paper mill, as well as for the transmission of power from prime movers to main lineshafts.



Courtesy: Allis-Chalmers Mfg. Co.

FIG. 14

Short Center Rope Drive Operating Wood Chipper.—Longview Fibre Co.

That their installations pays is well shown by some detailed

Gentlemen—We will now consider the question of the new plant—

When you discuss with your executives and engineers the question of a new mill, or any plant addition, bear in mind that an unusual construction service is available in The Austin Company, which will insure these three vital factors:

1. Low total cost for the complete project—Austin guarantees this figure in advance.
2. Completion date within a specified short time—Austin guarantees this, with bonus and penalty clause if desired.
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The wide experience which Austin has had in paper mill construction and industrial building generally, together with the extraordinary facilities for speedy, low cost construction anywhere in the country, make this the logical organization to call in when considering any building project.

Austin will cooperate with your own engineers to the fullest extent. Approximate costs and other information will be furnished quickly. Just wire, phone the nearest office, or send the memo.

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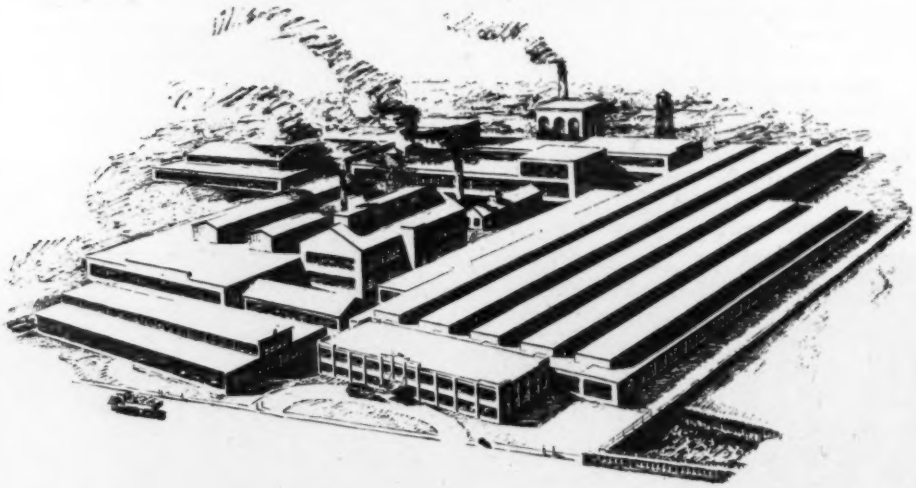
New York Chicago Philadelphia Detroit Cincinnati Pittsburgh St. Louis Seattle Portland
The Austin Company of California: Los Angeles and San Francisco The Austin Company of Texas: Dallas



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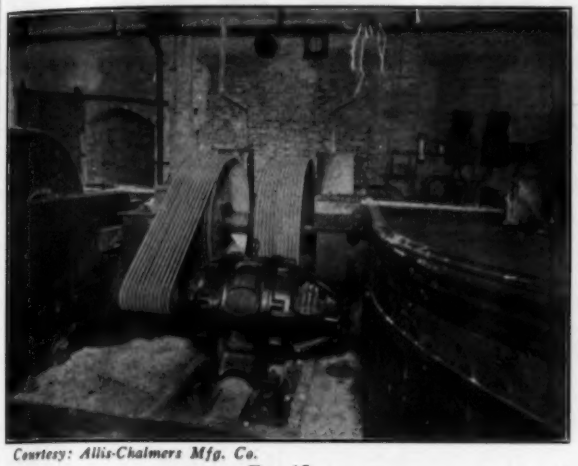
PTJ 2-23

cost statistics compiled at the W. C. Hamilton and Sons' plant at Miquon, Pa., where nine beaters are operated by silent chain, short center, drives, two 150-horsepower drives being employed, three of 100-horsepower, two 75-horsepower and two 40-horsepower. These drives were installed in 1920 at a total cost of approximately $7,500.00 and, with the exception of one year during which the plant was shut down, have been in continuous operation six days a week, twenty-four hours a day.



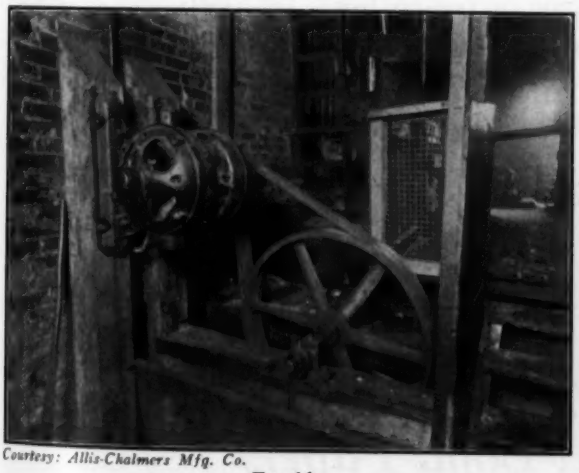
Courtesy: Allis-Chalmers Mfg. Co.

FIG. 15

Short Center Belt Drives on Beaters.—Hoberg Paper & Fibre Co.

Repairs have been negligible, consisting in the sole replacement of one of the 150-horsepower chains during the entire six years of continuous operation. During this time, the average maintenance per drive has totaled to $93.00 a year, covering $62.00 for lubricants and $31.00 expended for weekly inspections and oiling service. Figuring depreciation at 10 per cent and fixed charges at customary rates, this makes the net annual cost of the nine drives a matter of $2,037.00.

The savings effected by the drives are represented by the elimination of 8 per cent power waste occasioned by drive slippage,

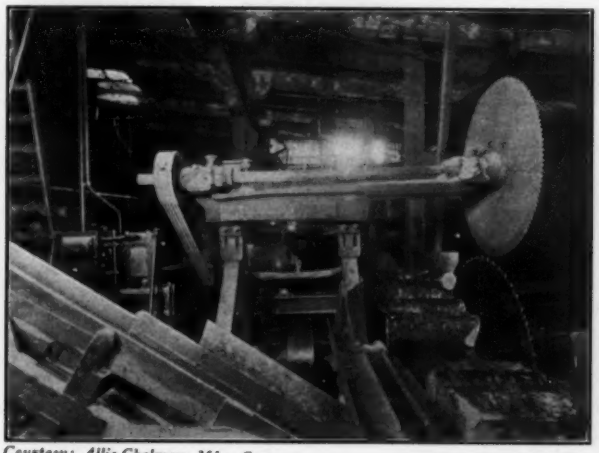


Courtesy: Allis-Chalmers Mfg. Co.

FIG. 16

Short Center Rope Drive on Chip Conveyor.—Hoberg Paper & Fibre Co.

substantial reductions in upkeep expenses, more uniform and efficient beater operation, conservation of valuable floor space and other direct and indirect economies. Taking the elimination of power wastage through drive slippage alone, on the assumption that the drives carry an average 50 per cent load, the drives effect a power saving during the year of approximately a quarter of a million horse-power hours, which at 2 cents a horsepower-hour means an annual gross saving in power of $5,000.00. Deducting the annual expenses for operation, maintenance and fixed charges, the net saving is about $3,000.00 a year for the one item of power conservation, a yearly yield of 40 per cent of the investment.



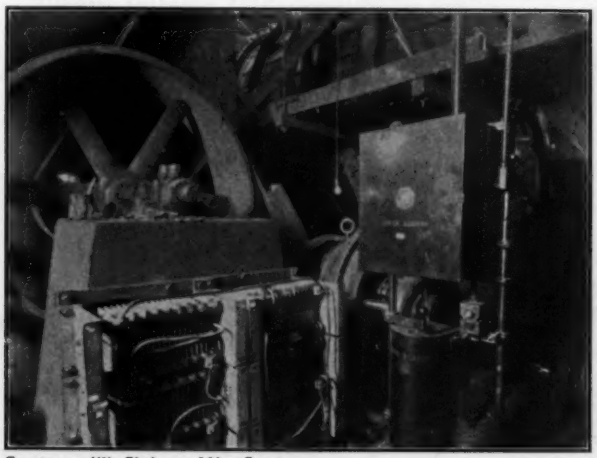
Courtesy: Allis-Chalmers Mfg. Co.

FIG. 17

Short Center Rope Drive Operating Cutoff Saw.—Hoberg Paper & Fibre Co.

Such savings are believed to be quite typical of well engineered silent chain drive installations and are not, by any means, limited to beater drive applications. Also, profitable short center chain drives are not limited to silent chain applications, for the flexible roller chain drive on short centers is also employed with marked economy. The Champion Coated Paper Company, Hamilton, Ohio, employs a roller chain on the pull drive to a 60-inch double coater. While the speed ratio is not great, the driving and driven sprockets are separated by a distance of only 20 inches.

Another example is the use of such roller chain drives in connection with a number of variable speed transmissions by the Specialty Papers Company at Dayton, Ohio. There the center distances range from 27 to 90 inches. The transmission of power

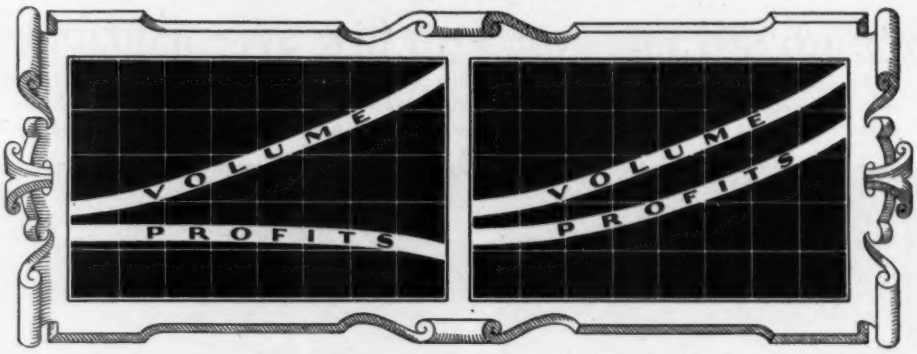


Courtesy: Allis-Chalmers Mfg. Co.

FIG. 18

Short Center Rope Drive on Drum Barker.—Hoberg Paper & Fibre Co.

is 100 per cent efficient, the chains are long lived and their first cost moderate. The ruggedness of the drive also makes it an excellent one on such exacting service as driving automatic stokers in the power plant, where it is essential that there be no breakdowns during long periods of continuous 24-hour service under trying conditions.



1927 1928

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"TOO many business men have forgotten that they are in business for the purpose of making profits, and that zero multiplied a million times is still . . . *zero*!"

Thus does Mr. O. H. Cheney, Vice President, American Exchange-Irving Trust Company, epitomize the reasons for "Profitless Prosperity", that unhappy but prevalent condition of gratifyingly larger volume yet disappointingly smaller profits.

Volume at the expense of prices!
Prices at the sacrifice of quality!
And both at the destruction of profits! Zero times zero . . . . .

Business built on quality is profitable. It is constructive. It fortifies the industry for inter-commodity competition. It is in harmony with the spirit of the times. It is enduring.

For 79 years the L. L. Brown mills have been dedicated to quality products exclusively. Last year nearly every distributor of L. L. Brown papers again increased his volume—and therefore profits — on these lines.

L.L.BROWN MILLS are the *only* mills making ledger, linen and bond papers and using none but WHITE rags

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Ledger, Linen and Bond Papers

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BROWN'S LINEN LEDGER *White, buff, blue*	ADVANCE LINEN LEDGER *White, buff, blue*	GREYLOCK LINEN LEDGER *White, buff, blue*	GREYLOCK LINEN LEDGER *with Brown's Flexible Hinge for loose leaf Books*	BROWN'S FINE *White, buff, blue, pink*	BROWN'S LINEN *Cream, blue; wove, laid*
ADVANCE BOND *White, buff, blue, pink*	GREYLOCK BOND *White*	BROWN'S LINEN TYPEWRITER PAPERS	ADVANCE AND GREYLOCK TYPEWRITER PAPERS	BROWN'S MANUSCRIPT COVERS	

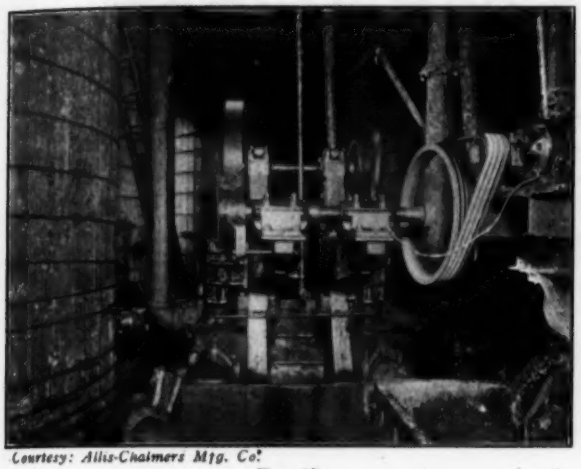
1849

Short Center Rope Drives

The third variety of approved short center drive, referred to by the somewhat misleading designation of a rope drive, consists in its modern form of a number of endless "V" shaped belts running in individual, conforming, grooves on driving and driven sheaves. The ability of these drives to operate on short centers, to balance the frictional resistance to the slippage of the "rope" members, the individual "V" shaped endless belts, on the sheaves to the effective driving tension on each of these members, is effected in a distinctive and efficient manner, which obviates any necessity of snubbing the various "ropes." The section of these transmitting bands being triangular and riding on the inclined walls of the sheave grooves, the contact of these members with the functioning sprockets effective in combating slippage covers substantially twice the area, per given arc of contact, of a flat belt on pulleys of similar diameter and like center spacing.

For example, an open flat belt drive, of such difference in pulley diameters (speed ratio) and shortness of centers that the belt contacted with the smaller pulley over an arc of 120 degrees, would be impractical on account of the pronounced slippage which would occur when the drive was subjected to even a minor proportion of the load the strength of the belt could accommodate. A corresponding short center rope drive with several individual "V" shaped driving elements, on the other hand, would function satisfactorily, for the 120-degree wrap of the power transmitting bands would furnish about the same resistance to slippage as would a flat belt drive with a 240-degree arc of belt contact, on a similar sized pulley.

These modern short center rope drives are extremely silent in operation, smooth running and efficient, and are apparently meeting with considerable favor in paper mill service. One mill user has installed over 90 such drives, in sizes from 1 to 150 horsepower.



Courtesy: Allis-Chalmers Mfg. Co.

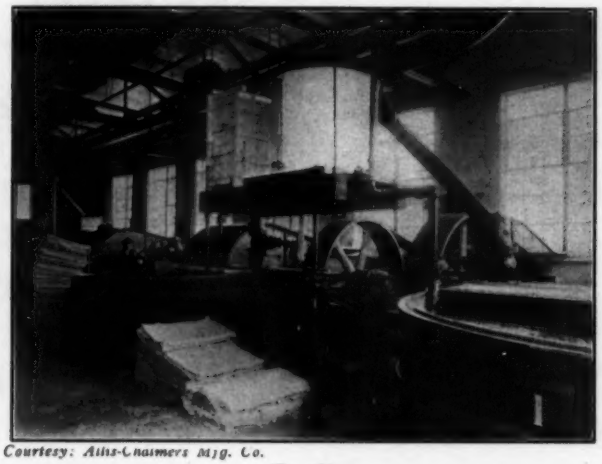
FIG. 19

Short Center Rope Drive Operating Stock Pump.—Hoberg Paper & Fibre Co.

Courtesy: Allis-Chalmers Mfg. Co.

FIG. 20

Short Center Rope Drive Operating Vacuum Pump.—Hoberg Paper & Fibre Co.

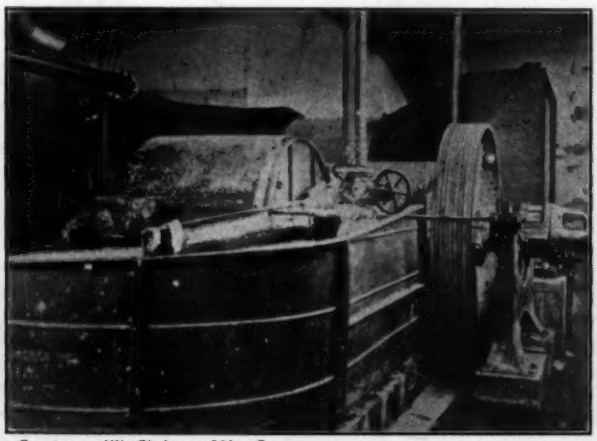


Courtesy: Allis-Chalmers Mfg. Co.

FIG. 21

Short Center Rope Drives Actuating Pulp Beaters.—Flambeau Paper Co.

Another, the Longview Fibre Company, Longview, Wash., employs 52 such transmissions for driving beaters, calenders, refiners, screens and wood chippers, views of several of which applications are shown. The Hoberg Paper and Fibre Company, Green Bay, Wis., are making use of over 60 such drives, a number of which are also illustrated, together with a number of other typical views of short center rope drives.



Courtesy: Allis-Chalmers Mfg. Co.

FIG. 22

Short Center Rope Drive on Dilts Beater.—Rainier Paper Co.

TO MAKE NEW FIBER BOXES

The General Fiber Box Company of West Springfield has begun the manufacture of an improved line of corrugated boxes for shippers' use. The material for this new product is long fiber wood pulp produced from the waste left from the manufacture of Douglass fir lumber in the saw mills of the Pacific Coast. Exclusive use of this material has been secured by the West Springfield concern. The long fiber pulp is said to have great merit in that it has greater tear resistance giving increased bending quality. Flaps of the boxes will not break when subjected to a strain that might mean the breakdown of a container made of less tough material.

Starting the New Year Right

THE Backus-Brooks Company has just placed an order for a G-E sectional paper-machine drive for its new Fort William paper mill.

This G-E drive will operate a 304-inch, 1500-ft. per minute paper machine—the largest, widest, and fastest paper machine in the world. This is the second sectional drive purchased by this company from General Electric in the period of a year—and exemplifies the confidence placed in G.E. by the leading paper manufacturers.

This confidence is further proved by a repeat order just placed by the Kalamazoo Vegetable Parchment Company for a G-E sectional drive to operate its new 166-inch paper machine.

The confidence of a continent is placed in G.E. sectional paper-machine drives.

GENERAL ELECTRIC

237-27

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Milwaukee, Wis.—The Hummell & Downing Company, 324 Thomas avenue, manufacturer of paper boxes and containers, is reported planning a new plant addition at Bradford and Cambridge avenues, to cost in excess of $45,000, with equipment. It is understood that an architect will soon be selected and that work will be placed in progress during the summer. George E. McKowen is secretary.

Steubenville, Ohio—The Liberty Paper Board Company, operating at the former local mill of the Hartje Paper Company, is perfecting arrangements for early operations at the plant, following an extensive remodeling and improvement program. The first machine will be started up during this month, while a second machine is expected to be ready in about seven or eight weeks. Following, another machine will be placed in operation in May, while the fourth, or last machine, will go into production during the summer. Work on the last noted machine installations, with auxiliary equipment is now in progress. When running full, the plant will have a production rating of 120 tons of paper board per day, and will give employment to more than 110 men.

Sacramento, Cal.—The Sacramento Pulp and Paper Company, 3245 Tenth street, Sacramento, has announced intentions of beginning work on its proposed pulp and paper mill during March. Site has been selected on the Yolo County side of the Sacramento River, near the city, and plans for the initial unit are being completed by C. A. Kieren, Portland, Ore., mill engineer. The pulp mill unit will have a capacity of 25 tons per day, to be increased to 35 tons after operations have been started; grape vine cuttings will be used as raw material and the company has secured extensive sources of supply of this waste stock. The entire project, including paper-making unit, is reported to cost close to $500,000, with machinery. H. D. Wagnon is president.

Tuscaloosa, Ala.—The E-Z Opener Bag Company, Decatur, Ill., is said to be arranging for the early construction of its proposed new local mill for paper and bag production, and work is scheduled to begin about March 15, on land grading and foundations. The plant will consist of a number of units and is reported to cost more than $3,000,000, with machinery. The project will provide for a complete paper-making unit, with adjoining mill for patented bag production of the company. A list of equipment to be installed is being arranged. H. D. Warren is secretary.

Gloucester, N. J.—The Lang Paper Company, Philadelphia, Pa., has work nearing completion on its local mill, comprising the upper portion of the former Pusey & Jones shipyard. Buildings have been remodeled and improved to accommodate the new works. The company is moving machinery from its plant at Twenty-fourth and Wood streets, Philadelphia, to the Gloucester mill, and will add new equipment for considerable increase in former capacity. It is expected to have the unit ready for service at an early date.

Brooklyn, N. Y.—The J. & S. Paper Box Corporation, recently formed by Joseph Quartin, 836 51st street, Brooklyn, and associates, with capital of $25,000, is said to be planning the early operation of a local plant for the manufacture of paper boxes and containers. William J. Lawler, 219 Adelphi street, Brooklyn, is also interested in the new organization.

Salinas, Cal.—Charles E. Boetz, Benson, Ariz., is at the head of a project to construct and operate a new mill in this vicinity for the manufacture of waxed papers, suitable for packing fruits, green vegetables, etc. It is understood that a site will be selected at an early date and plans drawn for a one-story structure. It is purposed to organize a company to carry out the enterprise.

Rhinelander, Wis.—The Rhinelander Paper Company has awarded a general contract to the C. R. Meyer & Son Company, Oshkosh, Wis., for new units at its plant, including finishing mill, power house and other structures. The capacity of the paper-making division will be increased with the installation of a new machine and auxiliary equipment. The entire project is reported to cost in excess of $500,000. A. W. Brown is president.

Menasha, Wis.—The Marathon Paper Mills Company, Rothschild, Wis., is said to have concluded arrangements for the purchase of four plants of the Menasha Printing and Carton Company, Menasha, including eastern branches and factory at Tenth and Sixteenth streets, Baltimore, Md. The plants will be continued in operation as a division of the purchasing company and an expansion program is reported under consideration.

Greenville, S. C.—The Southern Paper Box Company, recently organized by W. P. Guest, Greenville, and associates, has leased a building on South Main street and will occupy it for a new plant for the manufacture of paper boxes and containers. The structure will be remodeled and improved, with installations of equipment at an early date. It is understood that production is scheduled early in March. Mr. Guest will be manager of the new company.

Montville, Conn.—The Robert Gair Company, 420 Lexington avenue, New York, manufacturer of corrugated paper boxes and containers, has completed plans for a new boiler plant at its local mill and will begin construction at an early date. The extension is reported to cost more than $35,000, with equipment.

Sandusky, Ohio—The Hinde & Dauch Paper Company, manufacturer of corrugated boxes and containers, is said to be arranging for early financing, comprising largely the sale of a preferred stock issue of $4,500,000, a portion of the proceeds to be used for expansion, including recent acquisition of the Thompson & Norris Company, Brooklyn, N. Y., and the J. M. Raffel Company, Baltimore, Md., both manufacturers of kindred paper and corrugated containers. All plants of the purchased companies will be continued in service as in the past, making a total of 30 factories of the Hinde & Dauch company in 16 different cities; other expansion, also, will be carried out for increased production.

Fort Edward, N. Y.—The International Paper Company, 100 East 42nd street, New York, has completed the reconstruction of its local mill and will place it in active service at an early date. The unit is now equipped for the production of special bleached papers, having six machines with a capacity of 130 tons of book paper per day.

St. Helens, Ore.—The St. Helens Pulp and Paper Company has perfected plans for the construction of a new unit at its mill,

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EQUATOR OFFSET
FEATHERWEIGHT ENAMEL
FLEXIBLE ENAMEL
FRENCH E. F.
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MERIDAN OFFSET
METEOR BLANKS
MILHAM ENAMEL
NUCO BOND
OPACITY E. F.
OPACITY S. & S. C.
PAR E. F.
PICTORIAL OFFSET
PICTORIAL ENAMEL
PROSESSED BOARD
RADIUM ENAMEL
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for which general contract has been let to Robertson, Hay & Wallace, Worcester Building, Portland, Ore., and will proceed with work at an early date. The structure will be 100 x 200 feet, reported to cost close to $50,000, and will be used in part for storage and distributing service. Completion is scheduled in April.

New York, N. Y.—The International Power and Paper Company of Newfoundland, Ltd., operated by the International Paper Company, 100 East 42nd street, New York, has tentative plans under way for enlargements in the mill of the Newfoundland Power and Paper Company, Corner Brook, St. George district, Newfoundland, recently acquired, including installation of two new paper-making machines and auxiliary equipment, to increase the capacity from 400 to 600 tons per day. The company is also considering the construction of a new news print mill in the Gander River district of Newfoundland, to utilize available pulpwood in that section, with rating of 400 tons per day.

New Companies, Etc.

Brooklyn, N. Y.—The Bertram Blake Paper Company, Inc., has been incorporated with a capital of $150,000, to manufacture and deal in paper products. The incorporators are E. C. Rauss, Albert H. Ackerman, and Bertram T. Blake, 19 Kingston avenue, Scarsdale, N. Y. The last noted will head the company.

Los Angeles, Cal.—The Whedon Paper Converting Company has been incorporated with a capital of $250,000, to operate a local mill for paper production, with operations scheduled for an early date. The incorporators are W. B. Whedon, H. C. Brown and R. L. Fleury. The company is represented by G. R. Dexter, 1118 Guaranty Building, Los Angeles, an attorney.

Philadelphia, Pa.—The Edward Paper Company has filed notice of organization to operate at 1513 North 33rd street. The company is headed by Edward Lefkowith.

CHICAGO HOLDS THIRD POWER SHOW

Thousands of interested spectators and prospective buyers visited the Coliseum, Chicago, from February 14 to 18, looking over exhibits of the Third Chicago Power Show, constituting the largest display of power plant equipment ever seen in the Middle West.

The exhibits opened at noon, February 14, and over 250 makers of power plant equipment and engineers were represented in the big Coliseum main building and halls. Conference meetings consisting largely of discussions of power plant problems and economics and lead by noted figures in their respective fields, were held at the Hotel Stevens concurrently with the Power Show. The feature of the program at the Stevens was the banquet held Wednesday evening at which Rufus C. Dawes was the chief speaker.

Prominent among the exhibitors were companies who advertise to buyers in the paper industry. Included in this number were the following: Air Preheater Corporation exhibiting the Ljungstrom air preheater and its adaptation to the boiler plant. H. Butt, E. A. Kearbey and G. O. French represented the firm; Allen-Sherman-Hoff Company demonstrating the hydrojet system of ash handling with F. B. Allen, president, James Stokoe and E. U. Titus at the exhibit; Bailey Meter Company demonstrating automatic combustion control equipment for automatic regulation of fuel and air supply in accordance with steam demand. E. G. Bailey, president, was at the booth.

The Blaw-Knox Company exhibited electroforged steel grating and flooring, models of radio and transmission towers, preheaters and steel buildings with D. C. Grove, H. B. Loxterman and Harold Miller representing the firm. The Bristol Company provided an excellent display of recording and indicating instruments with L. G. Bean, H. A. Graff, F. W. Case and H. W. Moss in charge of the exhibit. Brown Instrument Company provided an interesting exhibit of power plant efficiency instruments and G. W. Keller, C. L. Saunders and R. W. Mayer took personal charge of the display. Jenkins Brothers, valves, were represented by H. B McLelland, H. A. Taif and W. E. Lueders.

Various types of valves were exhibited by the Locke Regulator Company represented at the Power Show by Naylor-Hickey Corporation, Chicago. The Crandall Packing Company with an interesting display of mechanical packings in fibrous and metallic types was represented by O. W. Wagner and James Simpson. The Cutler-Hammer Company exhibit in charge of F. U. Webster, C. J. Maloney and J. E. Middlekauf consisted of a full line of across-the-line starters in addition to Cutler-Hammer valve control equipment and wiring devices.

R. H. Thomas, president, and H. R. Ryan, sales manager, had charge of the interesting exhibit of the Economy Pumping Machinery Company including centrifugal pumps, automatic condensation pumps and Caisson pumps. Fairbanks, Morse & Co. exhibits of a Diesel engine generating set, centrifugal pumps and the new side suction centrifugal pump were in charge of C. W. House, G. A. Adkins and a large number of executives from the big firm. The Chicago Belting Company exhibit consisted of leather belting, leather packings, belt dressings and belt cements. Howard Dingle, president, and F. E. Bardrof, advertising manager, were at the booth of the Cleveland Worm and Gear Company where standard worm gear speed reduction units were exhibited.

George Farmer took care of the Clipper Belt Lacer Company exhibit showing models of Clipper belt lacers and fasteners and the new Clipper speed lacer. Schutte & Koerting Company displayed the Herringbone gear pump and the exhibit was in charge of A. C. Nell and E. J. O'Brien. R. T. Turner and W. B. Briggs were at the Shepard Electric Crane & Hoist Company where Liftabout and close clearance hoists were in operation. The SKF Industries, Inc., booth illustrating transmission equipment and mechanical demonstration of the advantages of ball and roller bearings was in charge of R. H. Demott, D. W. McAllen and W. R. McElroy.

E. J. Bohnen was at the Standard Oil display of power plant lubricants. J. M. Stannard and G. W. Clucas represented the Nash Engineering Company at the exhibit of vacuum and condensation pumps and Jennings-Hytor heating systems. The Norma-Hoffman Bearings Corporation exhibit in charge of T. J. Harley, D. E. Batesole and C. H. Wallace consisted of a display of ball, roller and thrust bearings and the fitting of these bearings to reduction gear units.

ROBERT A. FRANCE DEAD

Robert A. France, president of Joseph Parker & Sons, known as the West Rock Paper Mills, at 1155 Whalley avenue, died February 10 at his home, 16 Dwight street, New Haven, Conn., of pneumonia after three days' illness. He was in his 83rd year. He is survived by his widow, Mrs. Helen France, and by a son, Dr. James France, of Wilmington, Del.

Mr. France was born in Penicuicka, Scotland, about 10 miles from Edinburgh, the son of Alexander and Margaret France. When nine years old he came to this country with his parents, who settled in Norwich. Educated in the public schools of that city, he entered the employ of the Chelsea Paper Mill of which, later, he was made superintendent and general manager.

Leaving Norwich about 35 years ago, Mr. France came to this city, filling the position of general manager of Joseph Parker & Son Company. On the death of Mr. Parker a little more than 20 years ago, he was elected president of the firm, retaining that position until his death.

He was a member of the Union League Club and United Church, this city and in Norwich, where the greater part of his life was spent. He was prominent in Masonic fraternal circles, being a member of all Masonic bodies in that city. He was a past master of the Somerset Blue Lodge and a past Commander of Norwich Commandery, Knights Templar. He was also a member of Mecca temple, New York City.

By the same token that some people think you can make a waiter out of a taxi cab driver by dressing him in a tuxedo, they imagine that calling a Machine Finish "E. F." makes it an English Finish.

ATHENA PLATE

is an English Finish that is an English Finish. It is made in a high grade book mill that has been making "Papers of Old Fashioned Quality" for more than one hundred and twenty-five years. *Let us send you samples.*

Tileston & Hollingsworth Co.

"Papermakers for More Than 125 *Years"*

Mill and Offices Boston, Mass.

Daily Capacity 110,000 lbs. Mills at { East Walpole, Mass. / West Groton, Mass.

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COLORED BRISTOLS
SATURATING PAPERS
DUPLEX PAPERS
ROPE AND JUTE COATING STOCK
PATTERN PAPER
RED ROPE PAPER

Manufacturers of **IronTag**

We are prepared to make Special Papers for special uses and would be pleased to work out your paper problems through our Department of Engineering Methods.

OFFICES: 333 WASHINGTON STREET BOSTON, MASS.

News Print Industry in Stronger Position

Large Consolidations Recently Effected Are Proving of Great Assistance in Placing Market on Stronger Basis—Demand for News Print Has Increased Materially and Most Contracts Booked for 1928 Are of Larger Volume Than in Preceding Year

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., February 20, 1928.—The firmness which has prevailed in the news print industry so far this year is stated to have given a pleasant surprise to the local banks and stock brokers, and it is already evident that the steps taken in the way of consolidation to put the industry on a stronger basis are proving of the greatest possible help.

The January Returns

The most important development which has shown itself in the form of figures is found in the January returns showing that Canadian news print mills operated for the month on a basis of 88 per cent of capacity, as compared with 82.2 per cent in December. Last fall it was feared that in some of the winter months, especially after the Christmas shopping period was over, the demand for news print might show a falling off, and that it would be difficult to keep some of the mills operating on more than a 60 to 70 per cent basis. Instead of that demand has shown a perceptible increase, while contracts for 1928 are in a general way substantially larger than those for the previous year. Naturally also a larger proportionate output tends to increase the ratio of profit. The actual output of news print from Canadian mills for January was 186,721 tons, as against 161,724 tons in January, 1927. The production makes a new high record for January.

New Stock Issue by Wayagamack

The Wayagamack Pulp and Paper Company is offering valuable rights to its shareholders in the form of one new no-par-value common share at $60 for every three shares now outstanding. This gives an indicated value to the rights attached to each common share now outstanding of $15 a share. No announcement has been made regarding the purpose of the new financing, but as the company has $1,500,000 of short term bonds coming due in January of 1930, it is understood that this new issue is for the purpose of retiring this issue. The new stock will give the company practically two million dollars of new money, so it will be left with about half a million of additional working capital after provision for the retirement of the bond issue in question.

The rights to purchase the stock on the above terms will accrue to shareholders of record March 15th. Payment for the stock is to be made in four $15 instalments the first on or before May 1, the second July 3, the third, September 1 and the final payment on or before December 1. All or any instalments may be prepaid at any time and will bear interest at the rate of 5 per cent until December 1 when it is payable.

This new issue will bring the total of capital stock outstanding to 133,333 shares. The retirement of the bonds will mean a saving of $97,500 per annum after next year.

Strong Board for New Merger

The new directorate for the Canada Power and Paper Corporation, which was formed to take over the Laurentide Company and the St. Maurice Valley Corporation represents a combination of the two strongest banking groups in Canada. The board has been constituted as follows:

Chairman of the board, Sir Herbert S. Holt (president of the Royal Bank of Canada); president, G. Chahoon, Jr.; vice-president and managing director, George M. McKee. Directors: Sir Vincent Meredith (chairman of the board of directors of the Bank of Montreal); C. B. McNaught, Sir Lomer Gouin, Arthur Cross, J. W. McConnell, G. H. Montgomery, F. A. Sabbaton, W. E. Wilder, Edwin Hanson and J. H. Gundy.

The acceptance by Mr. Chahoon of the presidency is a fitting recognition of his long service and splendid leadership in the news print industry in Canada, and is welcomed by the shareholders of the Laurentide Company, most of them of many years' standing. To the vice-presidency Mr. McKee brings a record of outstanding success in the development and operation of news print properties, and to him is largely due the highly satisfactory position occupied today by the St. Maurice Valley Corporation. A letter to the shareholders of the Laurentide Company outlines the security behind the new debentures of the Canada Power and Paper Corporation. The debentures bear interest at the rate of 5½ per cent and the authorized issue is limited to $100,000,000 of which $28,800,000 will be outstanding. The Laurentide shares must be exchanged by the end of the current month. The security for the issue consists of the shares of the St. Maurice Valley Corporation and the Laurentide Company.

Some of the authorized issue of the new security is to be reserved to retire senior underlying securities of the Canada Power and Paper Corporation. The remainder can only be issued upon the acquisition of further properties and in accordance with conservative earnings restrictions set forth in the trust deed. The debentures to be issued in exchange for the Laurentide stock will mature in 1958 and will be callable at a premium at thirty days' notice.

An Example of Forest Protection

The measures taken by the leading pulp and paper companies in Canada to protect their forest resources find a good illustration in figures just made public in regard to the Abitibi Power and Paper Company. This company has a limit of approximately 4,500 square miles on which they maintain a forest fire protection force of 25 to 100 men in addition to the 33 men maintained by the Ontario Provincial Forestry Branch.

The company in 1927 had 30 rangers, 9 observation towers, 215 miles of telephone lines, 150 miles of trails, 21 cases of fire tools, 8 portable F. & M. h.p. fire pumps, 11 hand-spray pack sack pumps, 1 tank car for railroad fires, 2 motor boats, 4 railway gasoline cars, canoes, field glasses, rangers cabins, etc.

M. W. WALDORF DEAD

Michael W. Waldorf, 59 years old, prominent paper manufacturer, business man and civic leader, died February 10 at St. Paul, Minn., following an illness of several years.

Mr. Waldorf was born at St. Cloud and moved to St. Paul in 1883, at the age of 19. His first employment was with the Griggs, Cooper & Co. Later he entered the H. L. Collins Co., manufacturers of drug labels and bookbindings. Later he organized the American Paper Stock Company, handlers of waste paper, and the Waldorf Box Board Co., an associated enterprise which manufactured box board from waste paper. In 1917 he brought about the consolidation of three companies into the Waldorf Paper Products Company, of which he was president. At the time of his death the company was doing a business of $10,000,000 annually.

Mr. Waldorf was chairman of the board of trustees of St. Catherine's college, a member of the board of trustees of the St. Paul Children's hospital, a member of the advisory board of the Miller hospital, and vice president of the Archbishop Ireland Educational fund. He was a director of the St. Paul Association.

Mr. Waldorf is survived by his wife, to whom he was married at Red Wing, in 1893, three nieces and two nephews.

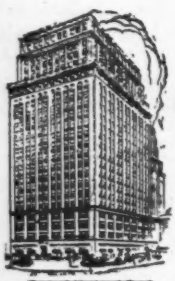
A Banking Service To Meet Your Requirements

THIS bank is well equipped to handle the business of concerns engaged in the paper industry as it is thoroughly conversant through its Board of Directors and Officers with the requirements of the industry.

We offer complete banking facilities, both Domestic and Foreign and we invite your inquiry either in person or by correspondence whichever may be convenient.

You will like the methods of this Bank.

Federal, State and City Depositary



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Resources over $15,000,000

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President, Cantor & Angel, Inc.

John T. Cochrane
President, Alabama, Tennessee & Northern Railroad Corp., Mobile.

Ernest V. Connolly
President

D. Samuel Gottesman
Chairman of the Board
President, M. Gottesman & Co., Inc.

J. Lewis Hay
President, Hay Foundry and Iron Works, Inc.

Albert Herskovits
Pres., Albert Herskovits & Sons, Inc.

Joseph Kruskal
President, Kruskal & Kruskal, Inc.

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President, A. M. Lamport & Co., Inc.

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Simon Newman
Vice-President, Brown Wheelock-Harris-Vought & Co. Inc.

Harry A. Smith
President, National Fire Insurance Co., Hartford

A. M. Turell
President, A. M. Turell Fabrics Corporation.

Which Picture Looks Better to You?

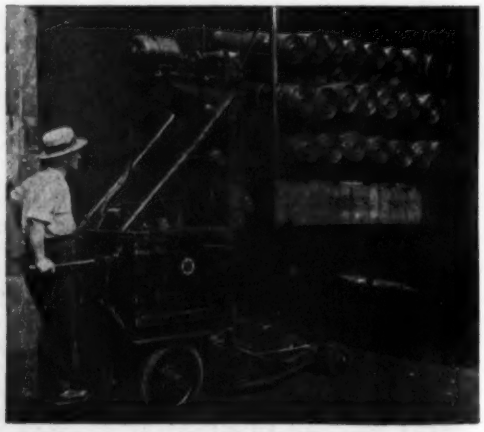
It is said that the paper industry is resolving into a survival of the fittest. The plant with the most efficient methods of handling is certain to have a decided advantage over poorly equipped competitors.

No matter whether it's loading box cars or storing heavy rolls in the warehouse. A Lakewood Tier-Lift means a saving in time and man-power.

We have just issued a new catalog that illustrates ways and means of cutting down handling costs in your plant. We will be glad to send you a copy of this Bulletin 35-P.

The Lakewood Engineering Co.

CLEVELAND, OHIO

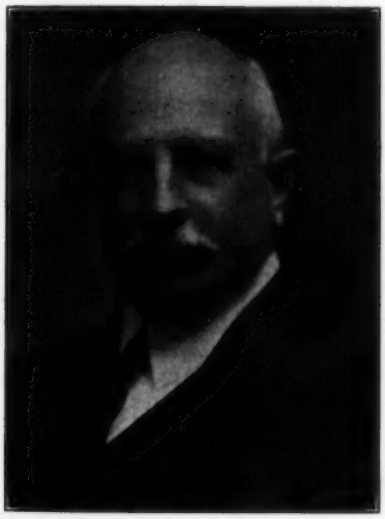


McDowell Mills Reach Centennial Mark

Through the attainment of a century mark in its business history the McDowell Paper Mills, located in the Manayunk paper making district of Philadelphia is given distinction by enrollment in the Association of Centennial Firms of the United States of America. With the admittance of the McDowell Mills to this unique organization of centennarian industries the local manufacturers are identified as pioneers of their respective fields in the country. Eligibility to enrollment includes that the business must be continuously under ownership of the same family throughout the century period. Ownership must be handed down from father to son, grandson or great grandson as consecutive proprietorship from the founder of the business. This honor for the McDowell Mills came with the century mile stone of the founding of the company in September of 1827—recognition being given to its 100th anniversary at the coming annual banquet of the organization to be held this spring in the Bellevue Stratford Hotel in this city under auspices of the Philadelphia Chamber of Commerce.

Thoroughly Remodeled Plant

While the mills date back to the pioneer paper making days of the City of Brotherly Love, where the first paper manufacturing of the country was inaugurated in the old Rittenhouse Mills, they have been thoroughly remodeled into a modern plant within the past half decade. Ever since the war days the McDowell Mills



CHARLES MCDOWELL, PRESIDENT

have been gradually renovated and all modern mechanical units and power facilities installed at considerable expense. During the past year complete electrification of the paper making plants and power supply sources was achieved, bringing the machinery and facilities in line with the most modern of paper mills. The improvements in the past year included new Jordans, additional rolls to the calenders, installation of Lanoye Pulpers, Chochrane Heater and separator, sottening equipment for the boilers, additional fire equipment, new 75,000 gallon water tank for fire protection purposes, wire cleaners, individual motorizing of the drives in all parts of the mills and the means for generating the plant's own supply of electricity through the use of General Motor equipment. The boiler room units also have been modernized by up-to-date boiler and accessories.

Founded by Joseph McDowell

Originally a jute wrapping paper mill the firm has within recent times broadened its scope of production to other lines of trade commodities. Under the modernizing influences the plant is now devoted to the speedy production of glassines in numerous designs, greaseproof products and imitation parchments in all sizes of rolls and sheets and an extensive line of fine wrapping papers. With the recently improved facilities the mills now are able to make, over night, delivery to New York with prompt service to other parts. The line of papers have become standard products with a nation wide reputation. The proximity of the McDowell Mills to the port of Philadelphia enable the manufacture of paper specialties at low cost because of ability to import the raw materials at minimum rates and cost of transportation. The addition of the pulp warehouses made in the past year gives adequate facilities for the storage and importation of volume quantities of

H. WILSON ENGLE, SECRETARY

this raw material and promotes a standardization of the production at attractive levels in cost of manufacture.

The business was founded by Joseph McDowell, who also conducted other mills in this section of the country, having been proprietor of the old Longstreth Mills on the Pennypack Creek which he operated at the time of the establishment of the present McDowell Mills. The Longstreth Mills manufactured hand made bonds and ledgers. The present mills were acquired to produce machine made papers in book grades and later were given over to production of jute wrappings, news print, colored textile specialties, bonds, mimeograph, strong wrapping papers and other specialties in the course of its business history. Joseph McDowell began his association with the American paper manufacturing industry in 1825 as a mill owner after serving with a Chester County paper concern in its production department and learning the practical side of the business. Two years previous to opening the present mills he took possession of the Longstreth Mills. The successor to Joseph McDowell was Francis Warren McDowell, father of the present proprietor, Charles McDowell, who is president of the company while H. Wilson Emgle is its secretary.

Projected Improvements

During the coming year the mills are to be equipped with new filtering devices and plant to provide an absolutely clear water service to the manufacturing department. New filterers and other units for this development will be furnished with the opening of the summer months. This new development will further increase and speed up production of the various lines manufactured including Hercules fiber, drug bond, colored fiber express, colored specialties, high grade wrappings, glassines and greaseproof papers and parchments.

World Wide Reputation

Saugbrugsforeningens, Fredrikshald, Norway

The largest mill in Norway

Cia de las Fabricas de Papel de San Rafael y Anexas, Mexico City

The largest mill in Mexico

The Fuji Paper Co., Tokyo, Japan

One of the largest mills in Japan

all use

Fitchburg NEW TYPE Patented Screen Plates

They screen FASTER and CLEANER than any others.

Yet they cost no more to buy.

FITCHBURG SCREEN PLATE CO.

FITCHBURG, MASS.

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General Chemical Company's other principal products include:

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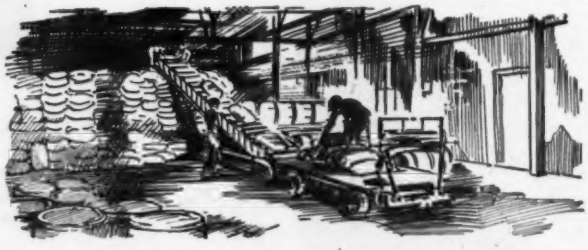
DISODIUM PHOSPHATE
ANHYDROUS BISULPHITE SODA
CHEMICALLY PURE ACIDS AND AMMONIA
INSECTICIDES & FUNGICIDES



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Quantity output and processes which protect the Standard Purity of the Company's product enable the user of Aluminum Sulphate to place his orders with General Chemical Company with implicit confidence.

And his good judgment is confirmed by the majority of purchasers of this important product.

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THE NICHOLS CHEMICAL CO., LTD., MONTREAL

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

For the Month Ending November 30, and for the Eleven Months Ending November 30, 1927, as Compared with Corresponding Months of Previous Year

IMPORTS—PAPER

	November				Eleven Months Ending November 30			
	1926		1927		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Paper and manufactures (total)	.....	$12,607,010	.....	$14,202,372	.....	$126,788,996	.....	$136,069,331
Printing paper—								
Standard news print ....lbs...free	339,098,926	11,270,631	375,592,507	12,669,152	3,361,033,146	112,615,950	3,607,245,490	119,601,884
Imported from—								
Finland	8,638,909	256,758	2,375,453	68,360	60,931,568	1,799,318	55,018,661	1,533,598
Germany	742,054	22,624	730,266	22,702	25,016,279	743,906	12,643,199	398,264
Norway	3,776,119	104,162	2,646,058	74,586	9,562,435	274,904	28,754,923	778,902
Sweden	17,543,382	503,168	11,307,482	309,871	87,079,707	2,607,900	120,238,497	3,486,555
Canada	288,212,922	9,723,489	332,519,055	11,331,408	3,028,360,313	102,325,687	3,239,315,064	108,380,281
Newfoundland and Labrador	20,165,139	659,741	25,471,355	846,599	148,975,279	4,829,186	148,517,025	4,939,697
Other countries	20,401	689	542,838	15,626	1,107,565	35,049	2,758,121	84,587
All other, n. e. s.....lbs...dut.	1,362,431	76,365	1,001,817	48,490	14,898,199	751,658	9,834,705	485,301
Grease-proof and waterproof papers..lbs...dut.	138,111	27,624	135,022	20,077	2,019,986	358,083	1,484,282	241,260
Kraft wrapping paper .....lbs...dut.	1,272,963	56,738	1,275,657	53,060	8,025,124	352,928	10,346,440	440,209
All other wrapping paper .....lbs...dut.	388,645	23,801	2,203,817	49,981	5,298,004	349,152	9,991,397	275,377
Writing, drawing, bond, etc.....lbs...dut.	296,982	77,207	264,634	74,532	3,440,015	825,011	3,160,043	818,165
Surface coated .....lbs...dut.	139,186	50,567	158,203	72,956	1,929,739	698,705	2,078,568	840,136
Tissue paper .....lbs...dut.	182,215	103,436	342,976	214,636	2,631,797	1,262,835	2,885,582	1,635,688
Pulp boards in rolls.....lbs...dut.	6,059,522	147,682	5,471,442	124,251	67,243,323	1,635,485	55,213,772	1,314,715
Other paper boards, n. e. s.....lbs...dut.	.....	90,045	2,221,911	51,593	.....	816,242	.....	775,915
Cigarette paper, cigarette books, and covers .....lbs...dut.	974,207	210,481	835,924	236,583	7,549,091	1,973,918	13,790,543	4,045,133
Hanging paper .....lbs...dut.	311,276	61,226	209,731	60,687	3,087,219	525,659	2,022,078	557,411
Paper boxes .....lbs...dut.	178,628	91,869	263,895	179,435	1,909,712	872,045	2,261,286	1,317,758
Pulp or papier-mâché and manufactures of, n. e. s. .....lbs...dut.	66,763	22,504	55,726	18,762	1,717,214	369,586	1,486,667	306,737
Duplex decalcomania, not printed....lbs...free	57,276	13,945	57,971	13,371	573,789	144,163	668,294	150,967
All other .....dut.	.....	282,889	.....	314,806	.....	3,237,576	.....	3,262,675

WOOD PULP

Mechanically ground wood pulp.....tons..free	23,650	687,603	25,275	618,625	251,074	7,667,662	196,985	5,405,663
Sulphite wood pulp .....tons	78,643	5,089,954	90,778	5,349,879	823,418	54,138,228	829,785	52,860,490
Unbleached .....tons..free	53,177	3,072,193	65,220	3,381,098	557,292	32,770,343	542,589	30,433,480
Bleached .....tons..free	25,466	2,017,761	25,558	1,968,781	266,126	21,367,885	287,196	22,427,010
Imported from—								
Finland	5,422	245,362	4,660	211,063	57,659	3,210,184	64,874	3,351,052
Germany	4,904	369,472	4,443	289,750	76,130	5,189,540	45,056	3,193,228
Norway	5,058	415,717	7,241	500,071	57,483	4,599,544	64,318	4,803,573
Sweden	24,811	1,557,504	38,701	2,072,538	257,070	15,841,893	304,771	18,202,963
Canada	36,327	2,371,071	32,752	2,086,617	344,863	23,446,730	318,602	21,340,291
Other countries	2,121	130,828	2,981	189,840	30,213	1,850,337	32,164	1,969,383
Sulphate wood pulp, unbleached (Kraft pulp) .....tons..free	30,298	1,907,289	35,968	2,128,313	308,231	19,504,049	300,063	18,400,737
Imported from—								
Finland	688	43,091	1,805	85,809	21,316	1,208,129	12,973	673,922
Norway	313	19,926	835	48,345	9,248	598,762	9,278	524,298
Sweden	16,542	1,006,290	21,224	1,196,149	145,554	8,909,305	149,919	8,864,858
Canada	12,454	821,300	11,679	772,796	129,120	8,608,388	126,551	8,255,484
Other countries	301	16,682	425	25,214	2,993	179,465	1,342	82,175
Sulphate wood pulp, bleached.....tons..free	1,400	83,112	697	48,977	14,091	908,020	10,678	702,722
Other pulp .....tons..free	592	44,070	1,221	68,011	2,558	179,809	4,340	240,312

CRUDE PAPER STOCK

Rags for paper stock.....lbs...free	37,269,408	740,079	39,862,029	718,444	438,341,064	9,563,200	351,818,774	7,027,219
Waste bagging, waste paper, etc.....lbs...free	9,225,267	199,783	9,988,668	118,779	105,313,826	2,212,360	97,348,557	1,288,673
Old rope and all other paper stock....lbs...free	6,547,800	179,250	3,486,469	131,058	75,733,551	2,934,248	56,996,209	1,792,648

CHEMICALS AND OTHER PAPER MAKERS' MATERIALS

Colors, dyes, stains, color acids, and color bases, n. e. s.....lbs...dut.	445,572	504,683	558,440	634,861	4,670,414	5,239,724	5,139,309	5,732,024
Imported from—								
Belgium	11,011	15,493	22,618	22,757	198,806	314,235	169,471	227,440
France	17,968	26,693	23,213	32,830	170,229	229,337	169,279	201,763
Germany	189,243	223,778	355,503	373,510	2,083,511	2,226,418	3,090,315	3,262,574
Italy	5,804	10,067	9,629	9,539	85,811	104,906	95,429	108,981
Switzerland	125,339	141,088	136,882	181,862	1,748,794	2,023,147	1,389,733	1,707,077
United Kingdom	19,194	20,994	3,267	3,656	166,841	167,839	139,730	141,510
Other countries	77,013	66,570	7,328	10,707	216,422	173,842	85,352	82,679
Casein or lactarene .....lbs...dut.	1,179,334	143,015	1,650,392	224,361	24,817,424	2,683,068	23,250,633	2,985,483
Kaolin, china, and paper clay.....tons..dut.	16,508	154,785	21,932	212,930	325,590	3,206,087	274,587	2,666,414

(*Continued on page 319*)

NATIONAL CELLULOSE CORPORATION

BALDWINSVILLE, NEW YORK

Specializing in Manufacture of

"CELLEEN"

Trade-Mark

(CELLULOSE WADDING)

SANITARY NAPKINS

FACIAL TISSUES

Daily Production 15,000 lbs.

NEW YORK OFFICE — 15 PARK ROW, NEW YORK, N. Y.

E. W. KIEFER, President
C. C. PECK, Treasurer
J. P. DURAND, Sec'y and Asst. Treasurer

CARL BONNING, Vice President
E. A. HAYNES, Vice President
J. E. DALEY, Superintendent

PORT HURON SULPHITE AND PAPER CO.

Manufacturers

Mitscherlich Pulp & Papers

Machine Glazed—Cylinder—Fourdrinier

Tissue To Tag

1888-1928

Central & Western Sales
Mills
PORT HURON, MICH.

Eastern Sales
52 Vanderbilt Ave.
NEW YORK CITY

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

(Continued from 317)

EXPORTS—PAPER

	November 1926 Quantity	November 1926 Value	November 1927 Quantity	November 1927 Value	Eleven Months Ending November 30 1926 Quantity	Eleven Months Ending November 30 1926 Value	Eleven Months Ending November 30 1927 Quantity	Eleven Months Ending November 30 1927 Value
Paper and manufactures (total)	.....	$2,115,802	.....	$2,350,500	.....	$24,500,808	.....	$24,718,504
Printing paper—								
News print paper ..... lbs.	2,511,920	128,855	1,693,039	82,653	36,714,254	1,770,239	23,751,460	1,137,527
Exported to—								
Canada ..... lbs.	178,979	13,479	155,997	9,896	1,624,909	112,681	2,966,911	185,846
Central America ..... lbs.	41,070	1,756	132,754	4,988	1,085,661	49,629	720,218	35,861
Mexico ..... lbs.	37,407	1,922	64,682	2,571	1,050,534	53,627	669,026	29,981
Cuba ..... lbs.	94,809	4,719	249,549	12,432	6,426,512	289,766	4,381,816	203,836
South America ..... lbs.	569,815	25,140	309,921	13,920	7,456,108	337,110	5,700,729	247,514
China, Hongkong, and Kwantung .... lbs.	809,952	49,128	46,969	2,504	8,522,775	398,299	386,993	23,170
Japan ..... lbs.	.....	.....	.....	.....	1,903,594	84,837	98,518	6,292
Philippine Islands ..... lbs.	734,585	30,618	665,630	32,057	7,085,597	354,859	7,273,679	306,062
Other countries ..... lbs.	45,263	2,093	67,537	4,285	1,558,564	89,431	1,553,570	98,965
Book paper, not coated ..... lbs.	1,816,609	178,265	1,130,514	97,976	16,335,800	1,570,185	14,431,026	1,251,357
Exported to—								
United Kingdom ..... lbs.	148,779	10,941	2,135	1,261	551,486	78,436	347,065	28,568
Canada ..... lbs.	363,593	26,990	216,781	18,603	3,792,442	324,240	3,574,280	286,466
Central America ..... lbs.	35,021	5,541	32,276	3,397	566,161	62,079	328,617	31,525
Mexico ..... lbs.	112,538	10,668	13,167	1,597	1,399,988	141,956	476,778	50,541
Cuba ..... lbs.	456,833	56,797	248,057	23,082	2,872,129	280,981	2,456,899	211,769
Argentina ..... lbs.	81,767	6,483	95,615	7,586	569,611	48,711	810,531	65,628
Other South America ..... lbs.	91,976	8,758	92,534	6,877	1,568,211	155,205	1,690,888	145,174
China, Hongkong, and Kwantung .... lbs.	104,541	7,979	5,870	795	1,057,464	101,129	386,075	43,227
Philippine Islands ..... lbs.	82,302	7,153	57,912	4,364	1,715,034	144,739	1,792,891	138,942
Australia ..... lbs.	150,884	13,798	64,215	7,440	601,022	66,295	794,363	85,645
Other countries ..... lbs.	188,375	23,157	301,952	22,974	1,642,252	166,414	1,772,639	163,872
Cover paper ..... lbs.	160,441	25,582	181,165	26,618	1,355,359	240,540	1,535,296	262,307
Grease proof and waterproof paper..... lbs.	280,980	31,191	154,783	27,001	2,223,782	327,119	2,484,530	356,326
Wrapping paper ..... lbs.	2,250,711	147,355	3,547,698	210,905	30,281,908	2,046,912	28,825,488	2,042,472
Surface coated paper ..... lbs.	432,147	55,859	457,561	56,783	5,428,409	686,355	5,565,149	706,532
Tissue and crepe paper ..... lbs.	477,456	103,576	392,428	106,198	3,938,923	992,053	4,279,903	981,061
Toilet paper ..... lbs.	438,372	53,378	509,414	57,260	4,607,206	575,309	4,940,619	601,589
Paper towels and napkins ..... lbs.	179,985	23,188	197,869	26,217	1,872,228	272,033	2,180,453	302,617
Box board ..... lbs.	3,427,408	105,408	3,763,459	127,032	47,957,491	1,367,159	40,869,056	1,267,245
Bristols and bristol board ..... lbs.	169,417	18,707	79,783	10,468	1,429,194	161,276	1,677,588	160,059
Other paper board and straw board..... lbs.	3,789,168	179,223	2,430,453	129,789	37,019,440	1,835,542	36,124,171	1,949,105
Sheathing and building paper..... lbs.	1,674,209	66,524	1,041,474	39,497	11,000,240	473,696	11,587,482	458,945
Wall board of paper or pulp..... sq. ft.	1,778,153	60,015	2,905,576	100,042	22,355,716	773,164	42,375,868	1,388,837
Blotting paper ..... lbs.	224,931	27,648	358,909	37,727	2,908,357	365,829	3,194,419	360,012
Filing folders, index cards, and other office forms ..... lbs.	51,666	14,621	60,719	28,721	729,817	212,724	955,963	284,772
Papeteries (fancy writing paper)..... lbs.	74,078	18,848	69,029	19,249	614,307	190,843	680,224	177,553
Other writing paper ..... lbs.	943,525	151,324	1,417,618	200,621	9,202,313	1,475,015	11,620,694	1,713,008
Paper hangings (wall paper)..... yds.	1,287,455	32,414	2,383,741	48,142	20,834,294	542,692	26,357,478	555,214
Paper bags ..... lbs.	852,295	79,273	847,070	74,486	10,116,379	904,124	10,386,054	896,127
Boxes and cartons..... lbs.	1,168,532	92,880	2,104,960	151,913	17,895,159	1,288,951	21,881,908	1,483,064
Envelopes ..... lbs.	185,886	30,929	193,203	31,696	2,482,214	446,536	2,292,685	384,456
Vulcanized fiber sheets, strips, rods, and tubes ..... lbs.	368,356	103,362	367,197	105,085	5,004,679	1,474,209	3,918,125	1,162,639
Manufactures of vulcanized and indurated fiber ..... lbs.	32,592	11,551	133,973	18,501	435,595	139,103	569,965	146,437
Cash register and adding machine paper.... lbs.	232,967	22,855	173,794	17,606	1,796,932	184,075	1,798,005	186,036
Other paper and paper products	.....	352,971	.....	518,314	.....	4,185,125	.....	4,503,207

WOOD PULP AND PAPER STOCK

Sulphite wood pulp ..... tons	1,784	111,694	2,866	123,736	19,083	1,232,773	21,229	1,130,953
Soda wood pulp ..... tons	82	5,400	317	26,990	1,471	124,200	2,005	175,026
Other wood pulp ..... tons	242	12,386	82	4,617	8,033	602,510	2,146	86,151
Rags and other paper stock..... lbs.	17,977,123	276,443	18,071,257	249,459	174,575,673	2,499,218	198,538,453	2,985,066

PAPER AND PULP MILL MACHINERY

Paper and pulp mill machinery..... lbs.	2,956,383	592,601	961,143	268,386	16,653,500	3,368,672	17,765,859	3,490,585

ABITIBI FIBRE CO. EXPANDS

One of the important subsidiaries of Abitibi Paper is Abitibi Fibre, about which little has been heard in connection with Abitibi's consolidation with Spanish River and four other news print producers. Abitibi Fibre, the successor of the Mattagami Pulp and Paper Company, was brought into the merger by Abitibi. It produces bleached and unbleached sulphite pulp. Recently several hundreds of thousands of dollars have been spent on the plant in order to enable it to operate to its entire capacity in the production of bleached sulphite pulp. As a result the plant can turn out 60,000 tons of high grade bleached sulphite pulp per annum. The mill is now operating at full capacity. Work is now proceeding with a view to increasing the power plant.

NEW ZEALAND WOODS TESTED FOR PULP

Two carloads of wood from New Zealand have arrived at the plant of the Great Western Paper Company at Ladysmith, Wis., where an experiment in making paper out of the wood will be tried under supervision of experts from the forest products laboratory at Madison.

The wood, three months en route from New Zealand, was sent out at the request of that government and all expenses of the experiment will be paid for by the consignors, as they wish to determine the papermaking qualities of New Zealand woods. The woods received at Ladysmith are pine and tawa.

The latter is an evergreen with willow-like leaves, native of New Zealand.

The Jessup & Moore Paper Co.

PHILADELPHIA NEW YORK

MANUFACTURERS OF

HIGH GRADE
BOOK PAPER

Machine Finish English Finish
Eggshell S & SC Book
Tablet and Specialties

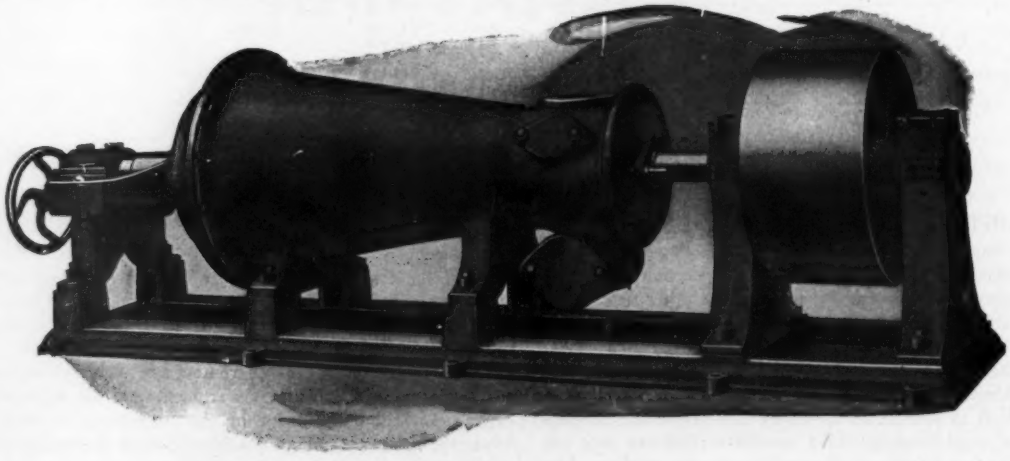
ALSO

THIONITE SODA PULP

THE SMITH & WINCHESTER MFG. CO.

SOUTH WINDHAM, CONN.

PAPER MILL MACHINERY **MACHINE BUILDERS** PAPER BAG MACHINERY



NO. 60 JORDAN ENGINE

Imports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING FEBRUARY 18, 1928

SUMMARY

Cigarette paper	290 cs.
Wall paper	189 bls., 11 cs.
Paper hangings	140 bls., 49 cs.
News print	750 rolls, 29 cs.
Printing paper	85 bls., 102 cs.
Wrapping paper	49 bls., 8 cs.
Packing paper	57 cs.
Tissue paper	85 cs.
Gold coated paper	11 cs.
Baryta coated paper	82 cs.
Photo paper	2 cs.
Decalcomania paper	39 cs.
Surface coated paper	224 cs.
Metal coated paper	4 cs.
Writing paper	7 cs.
Envelopes	55 cs.
Filter paper	13 cs.
Drawing paper	2 cs.
Colored paper	33 cs.
Wood pulp paper	4 cs.
Straw pulp board	34 rolls
Straw board	450 rolls
Miscellaneous paper	58 rolls, 34 bls., 51 cs.

CIGARETTE PAPER

Standard Products Corp., Suffren, Havre, 105 cs.
British American Tobacco Co., Caronia, Liverpool, 5 cs.
De Manduit Paper Corp., Independence Hall, Havre, 180 cs.

WALL PAPER

Schmidt Wallpaper & Paint Co., Cleveland, Hamburg, 1 cs.
W. H. Prentice, Inc., Cleveland, Hamburg, 4 bls.
Bendix Paper Co., Cleveland, Hamburg, 10 cs.
F. J. Emmerich, Cleveland, Hamburg, 170 bls.
F. J. Emmerich, Regina, Liverpool, 2 bls.
F. J. Emmerich, American Banker, London, 13 bls.

PAPER HANGINGS

A. C. Dodman, Jr., Inc., Suffren, Havre, 4 cs.
A. C. Dodman, Jr., Inc., Caronia, Liverpool, 8 cs., 31 bls.
Whiting & Patterson Co., Inc., Mauretania, Southampton, 13 cs.
W. H. S. Lloyd & Co., American Banker, London, 109 bls., 24 cs.

NEWS PRINT

A. S. Zabriskie, Karlsruhe, Bremen, 76 rolls.
Parsons & Whittemore, Inc., Karlsruhe, Bremen, 154 rolls.
E. Dietzgen & Co., Gaasterdyk, Rotterdam, 29 cs.
Parsons & Whittemore, Inc., Malmen, Kotka, 462 rolls.
Perkins, Goodwin & Co., Cleveland, Hamburg, 78 rolls.

PRINTING PAPER

Martin & Bechtold, Karlsruhe, Bremen, 11 cs.
Oxford University Press, Caronia, Liverpool, 13 cs.
J. J. Shore & Co., Gaasterdyk, Rotterdam, 17 cs.
J. J. Shore & Co., Cleveland, Hamburg, 5 cs.
Perkins, Goodwin & Co., Cleveland, Hamburg, 1 cs., 75 bls.
J. P. Heffernan Paper Co., Cleveland, Hamburg, 10 bls.
P. C. Zuhlke, Devonian, Antwerp, 55 cs.

WRAPPING PAPER

H. Reeve Angel & Co., Inc., Tomalva, Antwerp, 5 cs.
Stelz Book Binding Co., Tomalva, Antwerp, 3 cs.
Blauvelt Wiley Paper Manfg. Co., Athenia, Glasgow, 49 bdls.

PACKING PAPER

M. Morrison & Co., Cleveland, Hamburg, 57 cs.

TISSUE PAPER

F. C. Strype, Caronia, Liverpool, 3 cs.
F. B. Vandegrift & Co., Caronia, Liverpool, 17 cs.
Old Master Paper & Pulp Co., Caronia, Liverpool, 62 cs.
B. F. Drakenfeld & Co., Regina, Liverpool, 3 cs.

CERAMIC PAPER

B. F. Drakenfeld & Co., Regina, Liverpool, 2 cs.

GOLD COATED PAPER

F. Murray Hill Co., Karlsruhe, Bremen, 7 cs.
F. Murray Hill Co., Republic, Bremen, 4 cs.

BARYTA COATED PAPER

Globe Shipping Co., Karlsruhe, Bremen, 82 cs.

PHOTO PAPER

J. H. Schroeder Bkg. Corp., Karlsruhe, Bremen, 2 cs.

DECALCOMANIA PAPER

C. W. Sellers, Karlsruhe, Bremen, 5 cs.
L. A. Consmiller, Cleveland, Hamburg, 12 cs.
C. W. Sellers, Cleveland, Hamburg, 6 cs.
B. F. Drakenfeld & Co., Regina, Liverpool, 16 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Gaasterdyk, Rotterdam, 79 cs.
Atlantic Forwarding Co., Cleveland, Hamburg, 14 cs.
P. C. Zuhlke, Devonian, Antwerp, 66 cs.
Gevaert Co. of America, Devonian, Antwerp, 65 cs.

METAL COATED PAPER

Hensel, Bruckman & Lorbacher, Cleveland, Hamburg, 4 cs.

WRITING PAPER

Japan Paper Co., Suffren, Havre, 7 cs.

ENVELOPES

J. Beckhard & Co., Republic, Bremen, 55 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Banker, London, 13 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., American Banker, London, 2 cs.

COLORED PAPER

C. W. Williams & Co., Devonian, Antwerp, 26 cs.
Borden Riley Paper Manfg. Co., Devonian, Antwerp, 7 cs.

WOOD PULP PAPER

Steffens Jones Co., Gaasterdyk, Rotterdam, 4 cs.

STRAW PULP BOARD

J. P. Heffernan Paper Co., Gaasterdyk, Rotterdam, 34 rolls.

STRAW BOARD

Perkins, Goodwin & Co., Gaasterdyk, Rotterdam, 184 rolls.
A. Vuyk, Gaasterdyk, Rotterdam, 221 rolls.

MISCELLANEOUS PAPER

M. Spiegel & Son, Carnia, Genoa, 34 bls.
Hensel, Bruckman & Lorbacher, Suffren, Havre, 3 cs.
G. W. Sheldon & Co., Suffren, Havre, 7 cs.
Keuffel & Esser Co., Gaasterdyk, Rotterdam, 21 cs.
Steffens Jones Co., Gaasterdyk, Rotterdam, 58 rolls.
S. Gilbert, Gaasterdyk, Rotterdam, 16 cs.
Japan Paper Co., Gaasterdyk, Rotterdam, 4 cs.

RAGS, BAGGINGS, ETC.

American Woolstock Corp., Isonzo, Leghorn, 64 bls. rags.
J. Cohen Son & Co., Antonia, Southampton, 8 bls. rags.
Hannover National Bank, Antonia, Southampton, 217 bls. rags.
B. D. Kaplan, Antonia, Southampton, 3 bls. rags.
American Exchange Irving Trust Co., Carnia, Genoa, 143 bls. rags.
American Exchange Irving Trust Co., Carnia, Naples, 159 bls. rags.
Chemical National Bank, Karlsruhe, Bremen, 60 bls. rags.
Chemical National Bank, Karlsruhe, Bremen, 93 bls. thread waste.
Castle & Overton, Inc., Karlsruhe, Bremen, 73 bls. bagging.
W. H. Quick, Independence Hall, Havre, 155 bls. jute waste.
Katzenstein & Keene, Inc., Independence Hall, Dunkirk, 75 bls. rags.
Van Oppen & Co., Independence Hall, Dunkirk, 26 bls. rags.
S. Birkenstein & Son, Hellen, Marseilles, 70 bls. rags.
E. J. Keller Co., Inc., Ala, Antwerp, 71 bls. flax waste.
Castle & Overton, Inc., Ala, Antwerp, 193 bls. flax waste.
Royal Manfg. Co., Gaasterdyk, Rotterdam, 66 bls. cotton waste.
W. Steck & Co., Gaasterdyk, Rotterdam, 34 bls. rags.
Castle & Overton, Inc., Gaasterdyk, Rotterdam, 64 bls. rags.
L. Leibowitz, Francisco, Hull, 35 bls. rags.
E. Butterworth & Co., Inc., Francisco, Hull, 204 bls. rags.
American Exchange Irving Trust Co., Cleveland, Hamburg, 70 bls. rags.
Castle & Overton, Inc., Frederick VIII, Copenhagen, 376 bls. rags.
A. W. Fenton, Inc., Republic, Bremen, 80 bls. rags.
Atlantic National Bank, Regina, Liverpool, 90 bls. rags.
Old Colony Trust Co., Regina, Liverpool, 19 bls. rags.
Castle & Overton, Inc., Lucia C., Venice, 307 bls. rags.
R. F. Downing & Co., London Corp., London, 24 bls. rags.
Castle & Overton, Inc., London Corp., London, 90 bls. waste.
Castle & Overton, Inc., London Corp., London, 13 bls. rags.
Castle & Overton, Inc., Athenia, Glasgow, 61 bls. rags.
Castle & Overton, Inc., Marengo, Newcastle, 91 bls. rags.
G. W. Millar & Co., Marengo, Newcastle, 48 bls. bagging.
E. J. Keller Co., Inc., Marengo, Antwerp, 63 bls. rags.
E. J. Keller Co., Inc., Marengo, Antwerp, 105 bls. bagging.
A. W. Fenton, Inc., Marengo, Antwerp, 335 bls. rags.
Philadelphia Girard National Bank, Marengo, Antwerp, 252 bls. rags.
P. Berlowitz, Marengo, Antwerp, 206 bls. bagging.
W. Schall & Co., Marengo, Antwerp, 119 bls. bagging.
Royal Manfg. Co., Wytheville, Rotterdam, 55 bls. cotton waste.
Castle & Overton, Inc., Sinsinawa, Greece, 245 bls. rags.
Castle & Overton, Inc., Doric, Liverpool, 93 bls. bagging.
Castle & Overton, Inc., Chile Maru, Hamburg, 54 bls. rags.
Castle & Overton, Inc., Chile Maru, Hamburg, 113 bls. bagging.
E. J. Keller Co., Inc., Lisbon Maru, ——, 50 bls. rags.
E. J. Keller Co., Inc., Tigre, Antwerp, 58 bls. linen threads.

OLD ROPE

International Purchasing Co., Independence Hall, Havre, 107 bls.
Brown Bros. & Co., Gaasterdyk, Rotterdam, 156 coils.
Brown Bros. & Co., Devonian, Antwerp, 51 bls.
E. J. Keller Co., Inc., Marengo, Antwerp, 37 bls.

CASEIN

D. C. Andrews & Co., Cleveland, Hamburg, 203 bags, 15,225 ks.
Atterbury Bros., Inc., Segundo, Buenos Aires, 1,250 bags, 75,000 ks.
Champion Coated Paper Co., Segundo, Buenos Aires, 960 bags, 45,608 ks.
Champion Coated Paper Co., Pan America, Buenos Aires, 1,357 bags.
Kalbfleisch Corp., Pan America, Buenos Aires, 3,043 bags.
National City Bank, Pan America, Buenos Aires, 584 bags.

WOOD PULP

Castle & Overton, Inc., Gaasterdyk, Rotterdam, 600 bls. wood pulp.
Castle & Overton, Inc., Cleveland, Hamburg, 1,021 bls. wood pulp.
E. J. Keller Co., Inc., Cleveland, Hamburg, 1,012 bls. wood pulp.
Atterbury Bros., Inc., Frederick VIII, Oslo, 500 bls. wood pulp.
Perkins, Goodwin & Co., Stavangerfjord, Oslo, 300 bls. chemical pulp.
E. M. Sergeant & Co., Stavangerfjord, Oslo, 150 bls. chemical pulp.
Chemical National Bank, Stavangerfjord, Oslo, 300 bls. sulphite.
Chase National Bank, Stavangerfjord, Oslo, 2,000 bls. sulphate.
Atterbury Bros., Inc., Stavangerfjord, Oslo, 750 bls. wood pulp.
Bulkley, Dunton & Co., Lucia C., Trieste, 490 bls. wood pulp.
American Exchange Irving Trust Co., Lucia C., Trieste, 490 bls. wood pulp.
J. Anderson & Co., Lucia C., Trieste, 1,500 bls. wood pulp.
M. Gottesman & Co., Inc., Lucia C., Sebenico, 2,000 bls. wood pulp.
J. Anderson & Co., Casper, Sarpsborg, 480 bls. sulphite, 80 tons.
Scandinavian Pulp Agency, Inc., Casper, Gothenburg, 508 bls. kraft pulp, 101 tons.
M. Gottesman & Co., Inc., Wytheville, Rotterdam, 1,950 bls. wood pulp.
Buck, Kiaer & Co., Inc., Bergensfjord, Oslo, 800 bls. kraft pulp.

(Continued on page 323)

The Jessup & Moore Paper Co.

PHILADELPHIA NEW YORK

MANUFACTURERS OF

HIGH GRADE
BOOK PAPER

Machine Finish English Finish
Eggshell S & SC Book
Tablet and Specialties

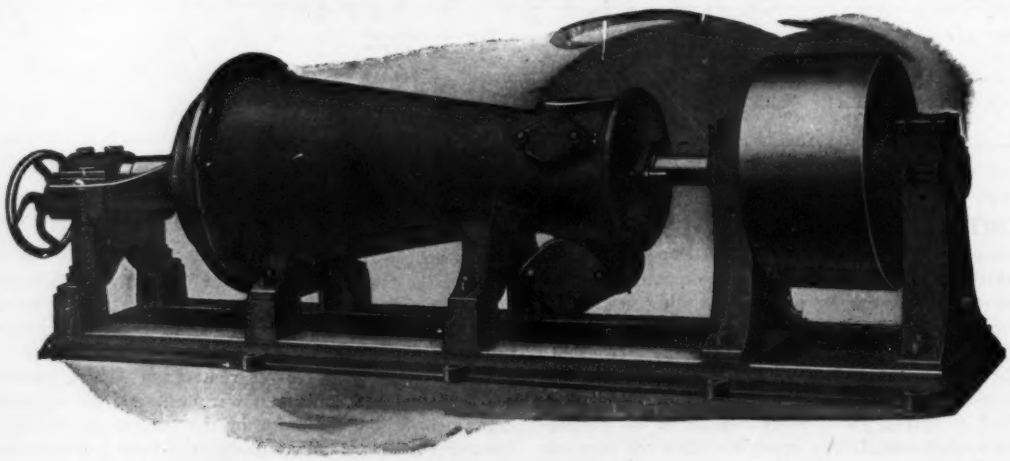
ALSO

THIONITE SODA PULP

THE SMITH & WINCHESTER MFG. CO.

SOUTH WINDHAM, CONN.

PAPER MILL MACHINERY **MACHINE BUILDERS** PAPER BAG MACHINERY



NO. 60 JORDAN ENGINE

Imports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING FEBRUARY 18, 1928

SUMMARY

Cigarette paper .....290 cs.
Wall paper .....189 bls., 11 cs.
Paper hangings .....140 bls., 49 cs.
News print .....750 rolls, 29 cs.
Printing paper .....85 bls., 102 cs.
Wrapping paper .....49 bls., 8 cs.
Packing paper .....57 cs.
Tissue paper .....85 cs.
Gold coated paper .....11 cs.
Baryta coated paper .....82 cs.
Photo paper .....2 cs.
Decalcomania paper .....39 cs.
Surface coated paper .....224 cs.
Metal coated paper .....4 cs.
Writing paper .....7 cs.
Envelopes .....55 cs.
Filter paper .....13 cs.
Drawing paper .....2 cs.
Colored paper .....33 cs.
Wood pulp paper .....4 cs.
Straw pulp board .....34 rolls
Straw board .....450 rolls
Miscellaneous paper.....58 rolls, 34 bls., 51 cs.

CIGARETTE PAPER

Standard Products Corp., Suffren, Havre, 105 cs.
British American Tobacco Co., Caronia, Liverpool, 5 cs.
De Manduit Paper Corp., Independence Hall, Havre, 180 cs.

WALL PAPER

Schmidt Wallpaper & Paint Co., Cleveland, Hamburg, 1 cs.
W. H. Prentice, Inc., Cleveland, Hamburg, 4 bls.
Bendix Paper Co., Cleveland, Hamburg, 10 cs.
F. J. Emmerich, Cleveland, Hamburg, 170 bls.
F. J. Emmerich, Regina, Liverpool, 2 bls.
F. J. Emmerich, American Banker, London, 13 bls.

PAPER HANGINGS

A. C. Dodman, Jr., Inc., Suffren, Havre, 4 cs.
A. C. Dodman, Jr., Inc., Caronia, Liverpool, 8 cs., 31 bls.
Whiting & Patterson Co., Inc., Mauretania, Southampton, 13 cs.
W. H. S. Lloyd & Co., American Banker, London, 109 bls., 24 cs.

NEWS PRINT

A. S. Zabriskie, Karlsruhe, Bremen, 76 rolls.
Parsons & Whittemore, Inc., Karlsruhe, Bremen, 154 rolls.
E. Dietzgen & Co., Gaasterdyk, Rotterdam, 29 cs.
Parsons & Whittemore, Inc., Malmen, Kotka, 462 rolls.
Perkins, Goodwin & Co., Cleveland, Hamburg, 78 rolls.

PRINTING PAPER

Martin & Bechtold, Karlsruhe, Bremen, 11 cs.
Oxford University Press, Caronia, Liverpool, 13 cs.
J. J. Shore & Co., Gaasterdyk, Rotterdam, 17 cs.
J. J. Shore & Co., Cleveland, Hamburg, 5 cs.
Perkins, Goodwin & Co., Cleveland, Hamburg, 1 cs., 75 bls.
J. P. Heffernan Paper Co., Cleveland, Hamburg, 10 bls.
P. C. Zuhlke, Devonian, Antwerp, 55 cs.

WRAPPING PAPER

H. Reeve Angel & Co., Inc., Tomalva, Antwerp, 5 cs.
Stelz Book Binding Co., Tomalva, Antwerp, 3 cs.
Blauvelt Wiley Paper Manfg. Co., Athenia, Glasgow, 49 bdls.

PACKING PAPER

M. Morrison & Co., Cleveland, Hamburg, 57 cs.

TISSUE PAPER

F. C. Strype, Caronia, Liverpool, 3 cs.
F. B. Vandegrift & Co., Caronia, Liverpool, 17 cs.
Old Master Paper & Pulp Co., Caronia, Liverpool, 62 cs.
B. F. Drakenfeld & Co., Regina, Liverpool, 3 cs.

CERAMIC PAPER

B. F. Drakenfeld & Co., Regina, Liverpool, 2 cs.

GOLD COATED PAPER

F. Murray Hill Co., Karlsruhe, Bremen, 7 cs.
F. Murray Hill Co., Republic, Bremen, 4 cs.

BARYTA COATED PAPER

Globe Shipping Co., Karlsruhe, Bremen, 82 cs.

PHOTO PAPER

J. H. Schroeder Bkg. Corp., Karlsruhe, Bremen, 2 cs.

DECALCOMANIA PAPER

C. W. Sellers, Karlsruhe, Bremen, 5 cs.
L. A. Consmiller, Cleveland, Hamburg, 12 cs.
C. W. Sellers, Cleveland, Hamburg, 6 cs.
B. F. Drakenfeld & Co., Regina, Liverpool, 16 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Gaasterdyk, Rotterdam, 79 cs.
Atlantic Forwarding Co., Cleveland, Hamburg, 14 cs.
P. C. Zuhlke, Devonian, Antwerp, 66 cs.
Gevaert Co. of America, Devonian, Antwerp, 65 cs.

METAL COATED PAPER

Hensel, Bruckman & Lorbacher, Cleveland, Hamburg, 4 cs.

WRITING PAPER

Japan Paper Co., Suffren, Havre, 7 cs.

ENVELOPES

J. Beckhard & Co., Republic, Bremen, 55 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Banker, London, 13 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., American Banker, London, 2 cs.

COLORED PAPER

C. W. Williams & Co., Devonian, Antwerp, 26 cs.
Borden Riley Paper Manfg. Co., Devonian, Antwerp, 7 cs.

WOOD PULP PAPER

Steffens Jones Co., Gaasterdyk, Rotterdam, 4 cs.

STRAW PULP BOARD

J. P. Heffernan Paper Co., Gaasterdyk, Rotterdam, 34 rolls.

STRAW BOARD

Perkins, Goodwin & Co., Gaasterdyk, Rotterdam, 184 rolls.
A. Vuyk, Gaasterdyk, Rotterdam, 221 rolls.

MISCELLANEOUS PAPER

M. Spiegel & Son, Carnia, Genoa, 34 bls.
Hensel, Bruckman & Lorbacher, Suffren, Havre, 3 cs.
G. W. Sheldon & Co., Suffren, Havre, 7 cs.
Keuffel & Esser Co., Gaasterdyk, Rotterdam, 21 cs.
Steffens Jones Co., Gaasterdyk, Rotterdam, 58 rolls.
S. Gilbert, Gaasterdyk, Rotterdam, 16 cs.
Japan Paper Co., Gaasterdyk, Rotterdam, 4 cs.

RAGS, BAGGINGS, ETC.

American Woolstock Corp., Isonzo, Leghorn, 64 bls. rags.
J. Cohen Son & Co., Antonia, Southampton, 8 bls. rags.
Hannover National Bank, Antonia, Southampton, 217 bls. rags.
B. D. Kaplan, Antonia, Southampton, 3 bls. rags.
American Exchange Irving Trust Co., Carnia, Genoa, 143 bls. rags.
American Exchange Irving Trust Co., Carnia, Naples, 159 bls. rags.
Chemical National Bank, Karlsruhe, Bremen, 60 bls. rags.
Chemical National Bank, Karlsruhe, Bremen, 93 bls. thread waste.
Castle & Overton, Inc., Karlsruhe, Bremen, 73 bls. bagging.
W. H. Quick, Independence Hall, Havre, 155 bls. jute waste.
Katzenstein & Keene, Inc., Independence Hall, Dunkirk, 75 bls. rags.
Van Oppen & Co., Independence Hall, Dunkirk, 26 bls. rags.
S. Birkenstein & Son, Hellen, Marseilles, 70 bls. rags.
E. J. Keller Co., Inc., Ala, Antwerp, 71 bls. flax waste.
Castle & Overton, Inc., Ala, Antwerp, 193 bls. flax waste.
Royal Manfg. Co., Gaasterdyk, Rotterdam, 66 bls. cotton waste.
W. Steck & Co., Gaasterdyk, Rotterdam, 34 bls. rags.
Castle & Overton, Inc., Gaasterdyk, Rotterdam, 64 bls. rags.
L. Leibowitz, Francisco, Hull, 35 bls. rags.
E. Butterworth & Co., Inc., Francisco, Hull, 204 bls. rags.
American Exchange Irving Trust Co., Cleveland, Hamburg, 70 bls. rags.
Castle & Overton, Inc., Frederick VIII, Copenhagen, 376 bls. rags.
A. W. Fenton, Inc., Republic, Bremen, 80 bls. rags.
Atlantic National Bank, Regina, Liverpool, 90 bls. rags.
Old Colony Trust Co., Regina, Liverpool, 19 bls. rags.
Castle & Overton, Inc., Lucia C., Venice, 307 bls. rags.
R. F. Downing & Co., London Corp., London, 24 bls. rags.
Castle & Overton, Inc., London Corp., London, 90 bls. waste.
Castle & Overton, Inc., London Corp., London, 13 bls. rags.
Castle & Overton, Inc., Athenia, Glasgow, 61 bls. rags.
Castle & Overton, Inc., Marengo, Newcastle, 91 bls. rags.
G. W. Millar & Co., Marengo, Newcastle, 48 bls. bagging.
E. J. Keller Co., Inc., Marengo, Antwerp, 63 bls. rags.
E. J. Keller Co., Inc., Marengo, Antwerp, 105 bls. bagging.
A. W. Fenton, Inc., Marengo, Antwerp, 335 bls. rags.
Philadelphia Girard National Bank, Marengo, Antwerp, 252 bls. rags.
P. Berlowitz, Marengo, Antwerp, 206 bls. bagging.
W. Schall & Co., Marengo, Antwerp, 119 bls. bagging.
Royal Manfg. Co., Wytheville, Rotterdam, 55 bls. cotton waste.
Castle & Overton, Inc., Sinsinawa, Greece, 245 bls. rags.
Castle & Overton, Inc., Doric, Liverpool, 93 bls. bagging.
Castle & Overton, Inc., Chile Maru, Hamburg, 54 bls. rags.
Castle & Overton, Inc., Chile Maru, Hamburg, 113 bls. bagging.
E. J. Keller Co., Inc., Lisbon Maru, ——, 50 bls. rags.
E. J. Keller Co., Inc., Tigre, Antwerp, 58 bls. linen threads.

OLD ROPE

International Purchasing Co., Independence Hall, Havre, 107 bls.
Brown Bros. & Co., Gaasterdyk, Rotterdam, 156 coils.
Brown Bros. & Co., Devonian, Antwerp, 51 bls.
E. J. Keller Co., Inc., Marengo, Antwerp, 37 bls.

CASEIN

D. C. Andrews & Co., Cleveland, Hamburg, 203 bags, 15,225 ks.
Atterbury Bros., Inc., Segundo, Buenos Aires, 1,250 bags, 75,000 ks.
Champion Coated Paper Co., Segundo, Buenos Aires, 960 bags, 45,608 ks.
Champion Coated Paper Co., Pan America, Buenos Aires, 1,357 bags.
Kalbfleisch Corp., Pan America, Buenos Aires, 3,043 bags.
National City Bank, Pan America, Buenos Aires, 584 bags.

WOOD PULP

Castle & Overton, Inc., Gaasterdyk, Rotterdam, 600 bls. wood pulp.
Castle & Overton, Inc., Cleveland, Hamburg, 1,021 bls. wood pulp.
E. J. Keller Co., Inc., Cleveland, Hamburg, 1,012 bls. wood pulp.
Atterbury Bros., Inc., Frederick VIII, Oslo, 500 bls. wood pulp.
Perkins, Goodwin & Co., Stavangerfjord, Oslo, 300 bls. chemical pulp.
E. M. Sergeant & Co., Stavangerfjord, Oslo, 150 bls. chemical pulp.
Chemical National Bank, Stavangerfjord, Oslo, 300 bls. sulphite.
Chase National Bank, Stavangerfjord, Oslo, 2,000 bls. sulphate.
Atterbury Bros., Inc., Stavangerfjord, Oslo, 750 bls. wood pulp.
Bulkley, Dunton & Co., Lucia C., Trieste, 490 bls. wood pulp.
American Exchange Irving Trust Co., Lucia C., Trieste, 490 bls. wood pulp.
J. Anderson & Co., Lucia C., Trieste, 1,500 bls. wood pulp.
M. Gottesman & Co., Inc., Lucia C., Sebenico, 2,000 bls. wood pulp.
J. Anderson & Co., Casper, Sarpsborg, 480 bls. sulphite, 80 tons.
Scandinavian Pulp Agency, Inc., Casper, Gothenburg, 508 bls. kraft pulp, 101 tons.
M. Gottesman & Co., Inc., Wytheville, Rotterdam, 1,950 bls. wood pulp.
Buck, Kiaer & Co., Inc., Bergensfjord, Oslo, 800 bls. kraft pulp.

(Continued on page 323)

THE MARVELLUM COMPANY

of HOLYOKE, MASS.

Manufacturers of Distinctive Decorative Papers

Announce the purchase of the plant and machinery of the former *Whitmore Manufacturing Co.* of Holyoke

MARVELLUM

In these greatly enlarged quarters THE MARVELLUM CO. will install the equipment now used in their Race St. plant and also remodel some of the present coating equipment to adapt it to a new line of specialties.

At the same time a plain coating department will be put in operation so that a complete line of plain and decorative papers will be offered.

Pasting, plating, embossing and general finishing for the trade will be available.

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Book Papers

P. H. GLATFELTER COMPANY SPRING GROVE

P. H. GLATFELTER, CO.

Established 1864

SPRING GROVE PA.

Imports of Paper and Paper Stock

(Continued from page 321)

WOOD PULP BOARDS

Lagerloef Trading Co., Karlsruhe, Bremen, 96 bls.

Lagerloef Trading Co., Cleveland, Hamburg, 506 bls., 67 tons.

WOOD PULP WADDING

Birn & Wachenheim, Gaasterdyk, Rotterdam, 50 bls.

PHILADELPHIA IMPORTS

WEEK ENDING FEBRUARY 18, 1928

S. Birkenstein & Son, Isonzo, Leghorn, 79 bls. old rope.

S. Birkenstein & Son, Carnia, Leghorn, 222 bls. old rope.

Chase National Bank, City of St. Joseph, Algiers, 400 bls. rags.

E. Burrows, Caronia, Liverpool, 55 bls. rags.

B. D. Kaplan, Caronia, Liverpool, 26 bls. rags.

H. Burrows, Caronia, Liverpool, 88 bls. rags.

H. Reeve Angel & Co., Inc., Tomalva, Antwerp, 4 cs. wrapping paper.

Equitable Trust Co., Tomalva, Antwerp, 80 bls. rags.

Equitable Trust Co., Tomalva, Antwerp, 39 bls. old rope.

V. Galaup, Tomalva, Antwerp, 100 bls. rags.

E. Mayer, Tomalva, Antwerp, 145 bls. rags.

Salomon Bros. & Co., Tomalva, Antwerp, 198 bls. rags.

Castle & Overton, Inc., Tomalva, Antwerp, 378 bls. rags.

Katzenstein & Keene, Inc., Tomalva, Antwerp, 35 bls. rags.

Union Waste Co., Tomalva, Antwerp, 10 bls. rags.

J. A. Steer & Co., Tomalva, Antwerp, 3 bls. rags.

Tradesmen's National Bank, Tomalva, Antwerp, 220 bls. rags.

Phila. Girard National Bank, London Corp., London, 529 bls. rags.

A. H. Searle, Inc., London Corp., London, 172 bls. rags.

Union National Bank, London Corp., London, 137 bls. rags.

Equitable Trust Co., London Corp., London, 61 bls. waste paper.

J. Lang Paper Co., London Corp., London, 243 bls. rags.

Castle & Overton, Inc., London Corp., London, 60 bls. rags.

Castle & Overton, Inc., London Corp., London, 91 bls. old rope.

American Exchange Irving Trust Co., Carenco, Marseilles, 100 coils old rope.

Equitable Trust Co., Carenco, Naples, 138 bls. rags.

Phila. Girard National Bank, Carenco, Naples, 149 bls. rags.

Castle & Overton, Inc., City of Flint, Scotland, 166 bls. waste.

Castle & Overton, Inc., Oklahoma, France, 916 bls. rags.

Castle & Overton, Inc., Westerner, Belgium, 312 bls. rags.

Castle & Overton, Inc., Bochun, Germany, 2,755 bls. wood pulp.

Castle & Overton, Inc., Oklahoma, France, 37 bls. rags.

Castle & Overton, Inc., Sarcoxie, France, 490 bls. rags.

Castle & Overton, Inc., Rexmore, Scotland, 51 bls. rags.

Castle & Overton, Inc., Boston City, England, 126 bls. rags.

Castle & Overton, Inc., Seydlitz, Bremen, 54 bls. rags.

Castle & Overton, Inc., Norway Maru, Japan, 20 bls. rags.

Castle & Overton, Inc., Sangamon, Africa, 23 bls. rags.

Castle & Overton, Inc., Binnendyk, Holland, 320 bls. wood pulp.

Castle & Overton, Inc., Manchester Commerce, England, 50 bls. bagging.

Castle & Overton, Inc., Oklahoma, France, 217 bls. rags.

E. J. Keller Co., Inc., Hog Island, ——, 132 bls. rags.

E. J. Keller Co., Inc., Hog Island, ——, 56 bls. bagging.

E. J. Keller Co., Inc., City of Alton, Rotterdam, 36 bls. rags.

E. J. Keller Co., Inc., Beemsterdyk, Rotterdam, 187 bls. rags.

E. J. Keller Co., Inc., Seydlitz, Bremen, 350 bls. wood pulp.

Parsons & Whittemore, Inc., Idarwald, ——, 135 bls. wood pulp.

Parsons & Whittemore, Inc., Idarwald, ——, 525 bls. wood pulp.

Bulkley, Dunton & Co., West Arrow, ——, 38 bls. rags.

Bulkley, Dunton & Co., Beemsterdyk, ——, 53 bls. rags.

NEW ORLEANS IMPORTS

WEEK ENDING FEBRUARY 18, 1928

Castle & Overton, Inc., Grand, Belgium, 271 bls. rags.

Castle & Overton, Inc., Cranford, France, 454 bls. rags.

E. J. Keller Co., Inc., Edam, Antwerp, 385 bls. flax waste.

Woodpulp Service Corp., America, Oslo, 2,040 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING FEBRUARY 18, 1928

Castle & Overton, Inc., Binnendyk, Rotterdam, 360 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING FEBRUARY 18, 1928

Bulkley, Dunton & Co., Casper, ——, 5,080 bls. kraft pulp, 1,016 tons.

Scandinavian Pulp Agency, Inc., Casper, Gothenburg, 278 bls. kraft pulp, 69 tons.

BALTIMORE IMPORTS

WEEK ENDING FEBRUARY 18, 1928

Kalbfleisch Corp., Independence Hall, Havre, 226 bags casein, 20,000 ks.

R. J. Reynolds Tobacco Co., Independence Hall, Havre, 200 cs. cigarette paper.

A. H. Searle, Inc., Independence Hall, Havre, 47 bls. rags.

A. H. Searle, Inc., Independence Hall, Dunkirk, 57 bls. rags.

A. H. Searle, Inc., Ala, Antwerp, 226 bls. rags.

2nd National Bank of Boston, Ala, Antwerp, 117 bls. rags.

Congoleum Nairn Co., Ala, Antwerp, 9 bls. rags.

A. W. Fenton, Inc., Ala, Antwerp, 94 bls. rags.

Old Colony Trust Co., Ala, Antwerp, 123 bls. old rope.

G. M. Graves Co., Inc., V. Emmanuele III, Dublin, 143 bls. rags.

Price & Pierce, Ltd., Casper, Gothenburg, 750 bls. wood pulp, 152 tons.

Scandinavian Pulp Agency, Inc., Casper, Gothenburg, 3,175 bls. kraft pulp, 634 tons.

Scandinavian Pulp Agency, Inc., Casper, Gothenburg, 254 bls. sulphite, 50 tons.

Parsons & Whittemore, Inc., Casper, Gothenburg, 450 bls. sulphite, 76 tons.

J. Anderson & Co., Casper, Sarpsborg, 1,740 bls. sulphite, 290 tons.

Bulkley, Dunton & Co., Wytheville, ——, 650 bls. wood pulp, 133 tons.

Bulkley, Dunton & Co., Wytheville, ——, 6,005 bls. sulphite, 1,217 tons.

National City Bank, Carenco, Genoa, 114 bls. rags.

Banco Com'l Italiane Trust Co., Carenco, Leghorn, 406 bls. rags.

Congoleum Nairn Co., Carenco, Leghorn, 82 bls. rags.

Congoleum Nairn Co., Carenco, Leghorn, 50 bls. bagging.

Bulkley, Dunton & Co., Consul Corfitzon, ——, 10,175 bls. wood pulp.

Bulkley, Dunton & Co., Innaren, ——, 415 bls. wood pulp.

Buck, Kiaer & Co., Inc., Arkansas, Oslo, 800 bls. kraft pulp.

Buck, Kiaer & Co., Inc., Luebeck, Hamburg, 310 bls. sulphite.

Woodpulp Service Corp., Maine, Oslo, 600 bls. sulphite.

Castle & Overton, Inc., Binnendyk, Holland, 1,260 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING FEBRUARY 18, 1928

Brown Bros. & Co., Francisco, Hull, 272 coils rope.

Brown Bros. & Co., Francisco, Hull, 220 bls. yarn.

M. Gottesman & Co., Inc., Lucia C., Sebenico, 4,000 bls. wood pulp.

Atterbury Bros., Inc., W. Calaumb, Buenos Aires, 834 bags casein, 50,040 ks.

Scandinavian Pulp Agency, Inc., Casper, Gothenburg, 12,500 bls. kraft pulp, 2,500 tons.

Scandinavian Pulp Agency, Inc., Casper, Gothenburg, 3,337 bls. sulphite, 667 tons.

Brown Bros. & Co., Casper, Gothenburg, 112 bls. old rope.

The Borregaard Co., Inc., Casper, Sarpsborg, 672 bls. sulphate, 112 tons.

J. Anderson & Co., Casper, Sarpsborg, 1,050 bls. sulphite, 175 tons.

J. Anderson & Co., Casper, Gothenburg, 600 bls. sulphite, 100 tons.

Bulkley, Dunton & Co., Copenhagen, ——, 6,675 bls. wood pulp.

Bulkley, Dunton & Co., H. S. Grove, ——, 3,000 bls. wood pulp.

Bulkley, Dunton & Co., Pacific, ——, 6,650 bls. wood pulp.

E. J. Keller Co., Inc., Tomalva, Antwerp, 42 bls. bagging.

Castle & Overton, Inc., Mexicano, Antwerp, 58 bls. rags.

Castle & Overton, Inc., Binnendyk, Holland, 760 bls. wood pulp.

Castle & Overton, Inc., ——, Germany, 180 bls. wood pulp.

Castle & Overton, Inc., Natirar, ——, 81 bls. rags.

NORFOLK IMPORTS

WEEK ENDING FEBRUARY 18, 1928

E. Butterworth & Co., Inc., Ala, Antwerp, 354 bls. rags.

Darmstadt, Scott & Courtney, Ala, Antwerp, 38 bls. bagging.

National City Bank, Ala, Antwerp, 105 bls. bagging.

British American Tobacco Co., Ala, Antwerp, 50 cs. cigarette wrappers.

E. J. Keller Co., Inc., Beemsterdyk, Rotterdam, 19 bls. rags.

MAKE RECORD AT ST. HELENS

The St. Helens Pulp and Paper Company's mill at St. Helens, Ore., made a record production last month, manufacturing 1,840 tons of kraft paper. It established a new record for 24 hours by manufacturing 78 tons. Paper was shipped to 18 states with one shipment to Manila. The steamer Charles H. Cramp, now en route to the Atlantic Coast, is carrying 450 tons from the St. Helens mill, the largest water borne shipment yet to be made since this new plant went into operation.

FLOORING GIVES WAY AT SHAWANO

Near destruction of the ground wood mill and a shutdown of several days resulted when flooring of the flume gave way early this week at the Wolf River Paper and Fiber Company, Shawano, Wis. Danger was averted by promptly closing the flume and opening the spillways. Water in the pond above the dam dropped about six feet and it was necessary to raise the level before operations could be resumed. Power from the dam is used only for lighting purposes in the mill.

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New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, February 22, 1928.

Seasonal conditions prevailed in the local paper market during the past week. Demand for the various grades of paper was fairly good and now that the spring campaign has been inaugurated, greater activity may be expected in the immediate future. Prices rule steady in most sections of the paper trade and there is not much talk of concessions around.

The undertone of the news print market is strong. Production is keeping just slightly ahead of consumption. The News Print Service Bureau reports that the Canadian mills produced 24,997 tons more in January than in the corresponding period last year, an increase of 15 per cent. The United States output was 15,870 tons, or 12 per cent less than in January, 1917.

Demand for the various grades of paper board was fairly persistent during the past week. Prices remained steady and unchanged. The tone of the fine paper market continues to improve and tissues are also in somewhat better request. The coarse paper market is in an excellent position. Wrapping paper continues to move at a good pace. Prices are holding up to previously quoted levels.

Mechanical Pulp

With production of imported ground wood restricted, the mechanical pulp market shows some signs of recovering. Most of the business transacted recently has been along routine lines but a more lively request is anticipated from the paper mills in the near future. Prices are generally holding to schedule.

Chemical Pulp

Due mainly to the lockout in the Swedish mills, the chemical pulp market is exhibiting a much firmer undertone. Demand for both the imported and the domestic grades is gradually improving and inquiries for future needs are being received in increased volume. While prices are generally unchanged, the situation is undoubtedly stiffening.

Old Rope and Bagging

Interest in old rope and bagging is becoming more general. The demand for old rope, in particular, appears to be growing more active. Prices remain steady and unchanged. Bagging continues to move in moderate volume. Accumulations, however, are not excessive, and the market is considered to be in a sound position.

Rags

The condition of the domestic rag market has improved slightly. Cotton cuttings and roofing rags are in particularly good request while other grades are moderately active. Prices remain unaltered, in most instances. The foreign rag market continues rather quiet but a revival of activity in the near future is anticipated in some quarters.

Waste Paper

Book and ledger grades and old kraft machine compressed bales are in excellent request. A better feeling is also developing for other grades of paper stock. The volume of inquiries in the market is fairly satisfactory for the time of the year and the outlook for the future is more encouraging than for some time past.

Twine

Trading in the twine market was mostly along routine lines during the past week. Now that the spring shopping season is approaching, however, a revival of business is anticipated at any time, according to reliable authorities. Although some slight price fluctuations have been reported, the market is in a fairly satisfactory position and no radical changes are anticipated in the near future.

TO MAKE GUMMED PAPER AT TROY

Troy, an enterprising town located 20 miles north of Dayton, is destined to become an industrial center of importance. The latest industry to be announced is the Brown-Bridge Mills, Inc., with a capitalization of $200,000, to enter the gummed paper and cloth business. The company has purchased all of the old Hayner Distillery Company's buildings lying east of the Baltimore & Ohio railroad on East Water street.

It is proposed to locate the main building of the new gummed paper plant in the four-story concrete structure formerly used as the bottling plant for the distillery. The three-story brick building adjoining the concrete structure will house a modern power plant for the use of the new factory. The huge brick building along the B. & O. tracks will be used for storage and other purposes. It is stated that plans already have been drawn by the B. & O. railroad company to run a siding to the concrete plant from the main line starting just south of the Water street crossing.

The promoters of the new $200,000 concern are C. W. Shartle of Middletown and Herbert S. Brown and P. H. Bridge, both of Troy. Mr. Shartle is widely known as a successful manufacturer of paper mill machinery and recently disposed of his plant in Middletown for a reported consideration of $1,500,000.

It is announced that John Adams Shartle, son of C. W. Shartle, will take an active part in the operation of the plant and expects to remove to Troy within a short time. He has had wide experience in the manufacture of waxed paper. Mr. Brown, until last month, had been connected with the Gummed Products Company, a successful Troy enterprise, and brings a broad experience to the new company. He has been busy securing contracts for the new concern and predicts that within a comparatively short time, the new company will be employing a large number of persons. Mr. Bridge is equally well known in Troy, having resided here for years.

Identified with the new company in the sales department will be Clay Geisinger and Kenneth Hoffman, formerly with the Gummed Products Company. Both are experienced salesmen in the gummed paper and cloth business and the new company feels fortunate in annexing their services. Frank Mayo will be the production manager. He is a resident of Troy and his technical knowledge is expected to assure the production of a high-grade product, according to the new owners. John Renehan of Troy will have charge of the research and chemical work in the new mills. He has been employed in a similar capacity with the Gummed Products Company for several years.

The work of installing the factory will be started at once and it is expected the plant will be in operation within a short time as the concrete building is of such construction that few changes will be necessary.

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Quality Speaking—

from station Heller & Merz. Colors that stand up to the job. Service that delivers the goods when and where you want them. Dyers! Tune in on satisfaction.

The HELLER & MERZ COMPANY
505 Hudson St., New York

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Factory—NEWARK, N. J.

Clay

300 tons daily

AMERICAN MADE FOR AMERICAN TRADE

AT LAST!!

"An American Coating Clay"

H. T. Brand Coating Clay, Highest Grade Filling Clay, being used in some of the largest paper mills in the country. Send for samples and article on *"An American Coating Clay."* Forty-two years experience in American washed clays are back of this product.

Let us submit sample and quote you.

THE
EDGAR BROS. CO.
50 Church St.,
NEW YORK

Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, February 22, 1928.

Trading in the local chemical market was moderately active during the past week and the market displayed a sound undertone. Contract withdrawals continued to move in excellent volume. Inquiries for future requirements were fairly numerous. Prices generally remain unaltered and the schedule is being adhered to in a satisfactory manner, in most instances.

BLANC FIXE.—Conditions in the blanc fixe market are little changed. Both the pulp and the powder are in persistent request and supplies are moving into consumption in good volume. Prices are being maintained at recently quoted levels. The pulp is quoted at $60 per ton, in bulk, and the powder is selling at from 4 cents to 4¼ cents a pound, in barrels, at works.

BLEACHING POWDER.—Steadiness prevails in the bleaching powder market. Supplies are not in excess of requirements. Contract shipments are moving in a routine manner. Quotations remain unaltered. Bleaching powder is selling at from $2 to $2.35 per 100 pounds, in large drums, at works, according to quantity and size of contract.

CASEIN.—The position of the casein market is sound. Offerings of both the domestic and the imported product are ample to meet current demands. Prices remain unchanged. The quotation for imported casein ranges from 18 cents to 18½ cents a pound, car lots, in bags, while domestic casein is still selling at from 17 cents to 18½ cents a pound.

CAUSTIC SODA.—Demand for caustic soda is well up to average. Consumption is being well maintained. Contract shipments continue to go forward in large volume. Solid caustic soda is quoted at from $2.90 to $2.95 per 100 pounds. The flake and the ground are selling at from $3.30 to $3.35 per 100 pounds, in large drums, at works.

CHINA CLAY.—Contract withdrawals of china clay were fairly heavy during the past week. Most of the business transacted was along routine lines. Imported china clay is still selling at from $15 to $25 a ton, in bulk, ship side. Domestic paper maker's clay is quoted at from $8 to $9 a ton, at mine, and pulverized at from $10 to $12 a ton.

CHLORINE.—Producers of chlorine continue to report excellent withdrawals on contract. Demand for chlorine is well maintained and prices are holding up to schedule. Chlorine is quoted at 3½ cents a pound, in tanks, or multi-unit cars, at works, on contract orders. The spot quotation ranges from 3¾ cents to 4 cents a pound.

ROSIN.—No radical changes transpired in the rosin market during the past week. Demand was only moderate and prices were rather easy. At the naval stores, the grades of gum rosin used in the paper mills are now quoted at from $9.40 to $9.50 per 280 pounds, ex dock, in barrels. Wood rosin is still quoted at $7 per 280 pounds, southern shipping points.

SALT CAKE.—The salt cake market continues active. Contract shipments are proceeding at a normal pace and prices are holding up very well. Spot demand is about normal for the time of the year. Salt cake continues to sell at from $18 to $19 a ton, in bulk, at works. Chrome salt cake is selling at from $14 to $15 a ton, in bulk, at works.

SODA ASH.—Seasonal activity rules in the soda ash market. Supplies continue to move into consumption in heavy volume. Prices are being maintained at former levels, in most instances, and shading is infrequent. Contract quotations, in car lots, at works, are as follows: in bags, $1.32½ and in barrels, $1.55.

STARCH.—Trading in the starch market continued on routine lines during the past week. The movement of supplies into consumption was normal for the season. Stocks are ample for current needs. Prices are generally holding up to schedule. Special paper maker's starch is quoted at $3.32 per 100 pounds, in bags, and at $3.59 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—Mill interest in sulphate of alumina shows signs of improvement. The tone of the market is quite steady and prices remain unchanged. Commercial grades of sulphate of alumina are selling at from $1.40 to $1.45 per 100 pounds, in bags, at works. The iron free is quoted at from $2 to $2.05 per 100 pounds, in bags, at works.

SULPHUR.—Demand for sulphur was well maintained throughout the week and contract withdrawals of this product continue to move at a satisfactory pace. Prices remained unaltered. Sulphur is quoted at from $18 to $19 a ton, in bulk, at mine, according to quantity. The spot quotation is $20 a ton, in bulk, at mine.

TALC.—The tone of the talc market is steady and prices are being maintained at the same levels which have prevailed for some considerable time. The quotations on domestic talc range from $16 to $18 a ton, in bulk, at eastern mines. French talc is still selling at from $18 to $22 a ton, in bags, ship side.

PROGRESS AT FORT EDWARD MILL

The work of converting the Fort Edward mill of the Internaational Paper Company for the manufacture of coated papers is progressing steadily. During the past week another machine, No. 2, which has been in course of re-building for some time, was started on a trial run making book paper. This machine formerly ran on news print. Unless something unforeseen turns up this machine will be started in regular operation some time during this week.

The placing of No. 2 machine in operation marks the completion of three machines, Nos. 3, 4 and 2, which have been made over from news print machines for the manufacture of commercial paper since last April when the work of remodeling the local mill was started.

Operation of the additional machine will mean the transfer of a number of men from the list of unskilled to skilled labor as three complete crews will be necessary to operate the machine.

The work of rebuilding the remaining machines of the plant has progressed to a point where it is said to be only a matter of a short time when the plant will be operating to capacity with all machines turning out commercial paper.

Since the contract was awarded for making the necessary changes at the local mill to permit a change in the manufactured product, which since the plant started has been news print, many improvements have been effected and a number of new buildings added to the local plant, replacing, in some cases, old buildings which had become obsolete and which were razed.

BOSTON BUSINESS FAIRLY GOOD

Paper business continues good in the Boston market with a little more interest and inquiry. Mill representatives in town last week reported a general improvement in the demand this month. The market is apparently becoming adjusted to conditions, and mill men are alive to the situation. Prices are maintained firmly at the same levels. There is practically no change in box board.

The paper stock market remains dull as a whole, although some lines have shown some improvement, notably in old paper. Solid ledger has been moving to a certain extent and is now quotable at 2.25 compared with a previous price of 1.95 to 2.00. Book stock is also in more demand, the price ranging from 1.50 to 1.60, against 1.45 to 1.60 a week ago. Some activity is reported in old kraft, for which 2.10 is asked. No. 1 mixed paper is a trifle lower, being quoted at .45 to .50, compared with a previous price of .50.

Bagging is moving little, if any, on account of the weakness in jute papers. Prices of foreign manila rope are so high abroad that dealers here cannot buy and sell at a profit. Local dealers in bagging say that methods of packing and the fact that sellers abroad do not meet price conditions here mitigate against operation in that commodity.

New and old domestic rags are generally inactive, except that there is some call for old No. 1 whites at around 5 cents. Foreign rags are in about the same position. Dark cottons are quotable at 1.55, with a downward tendency. Some have sold as low as 1.50.

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— CHAIN HOISTS —

ARE PUT TOGETHER AS CAREFULLY AS A WATCH, with every detail for hard service considered.

All working parts are protected by oil-tight dust-proof case which holds oil sufficient for six months' lubrication.

We guarantee Multiple Gear Chain Blocks weather-proof and to work satisfactory in any position.

¼ to 20 TONS CAPACITY

Reading Chain & Block Corporation

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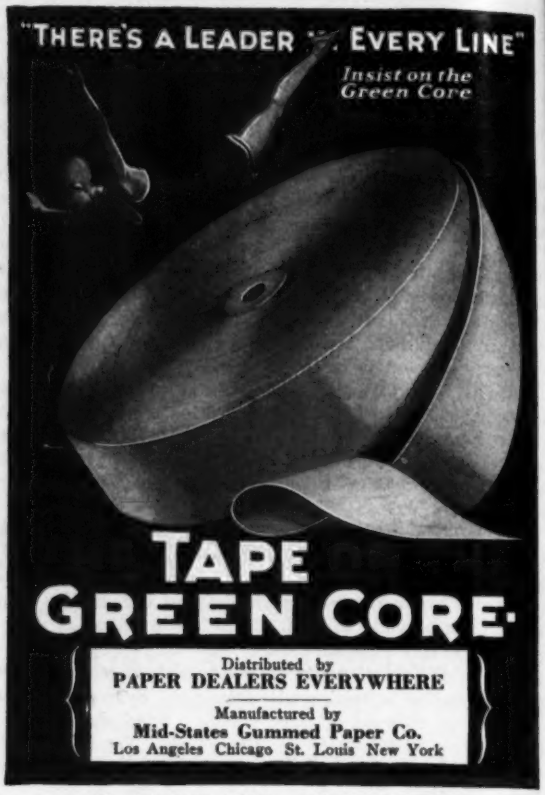

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Every Week—

The Paper Trade Journal publishes the happenings of interest in the Pulp and Paper Industry—Covers it completely is saying it a little clearer.

To reach buyers in this field, advertising in these columns can carry your message to many that are interested in your products.

As a member of the Audit Bureau of Circulations our circulation claims are not only authentic but provable.

THE PAPER TRADE JOURNAL
10 East 39th St. New York

Market Quotations

Quoted by Hepburn & Co., 74 Broadway, N. Y. City, to whom all inquiry for quotations on these or any other Securities is referred.

BONDS	BID	OFFERED
A. P. W. Pulp & Power, 7s 1945	101	102
American Writing Paper, 6s 1947	80	82
Bastrap Pulp & Paper, 6½s 1940	100	103
British Columbia Pulp & Paper, 6s 1950	85	90*
Beaver Products Corp., 7½s 1942	106	109
Bedford Pulp & Paper, 6½s 1942	98½	None
Brown Paper Co., 1st 5½s 1946	96½	99
Bryant Paper Co., 6s 1942	100½	102
Cape Breton Pulp & Paper, 6s 1932	101	103
Central Paper, 7s 1933	85	None
Central Paper Serial 6, 6½s 1942	89	...
Champion Coated Paper, 6s 1926 to 1932	99	...
Champion Fibre, 8s 1930	100	...
Champion Paper Corp'n, 1st 6s 1945	95	97
Continental Paper Products, 6½s 1943	88	91½
Cornell Wood Prod., 7½s 1937	100	104*
Crown Willamette Paper, 6s 1951	100	102
Donnaconna Paper, 6s 1940	101	102½
Dells Paper & Pulp Serial, 6s 1926-38	*95	...
Eastern Mfg. Co., 7s 1938	89	91
Eddy Paper, 7½s 1931	101	103
Escanaba Paper Serial, 6s 1928	99¼	...
Filer Fibre Serial, 7s 1926-39	95	...
Fort Orange Paper, 7s 1942	99	102
Fox River Paper, 7s 1931	99	...
Gair Company, 5½s 1942	96	99
Gilbert Paper Co., 6½s 1926-29	91	None
Hammermill Paper, 6s 1939	100	103*
Hoberg Paper & Fibre, 7s 1937	94½	96
Itaska Paper & Prairie River Power, J+5½s 1926-38	99	101
Itaska Paper, 1st 6s 1933-38	99	101
Kalamazoo Veg. Parchment, 6s 1938	98	...
Marinette & Menominee, 7½s 1936	100	103
Menasha Printing & Carton, 6½s 1939	99½	...
Monroe Paper Products, 7½s 1932	96	...
Munising Paper, 6s 1927-36	96	100
Nekoosa Edwards, 1st Ref. 6s 1928 to 1942	96	99*
Orono Pulp & Paper, 6s 1943	98	...
Orono Pulp & Paper, 5s 1941	94	...
Oswego Falls Corp., 6s 1941	98	100*
Oxford Paper, 6s 1947	104	...
Paepcke Paper Mills, 7s 1930	99	None
Parsons Pulp & Lumber, 7s 1928	97	...
Parker Young Co., 6½s 1944	96½	98½
Paterson Parchment Paper, 6s 1938	100½	102
Penobscot Chemical Fibre, 6s 1942	98	...
Queens City Paper, 7s 1932	95	100*
Richardson Co., 6s 1938	100	...
River Raisin Paper, 6s 1936	96	...
Spanish River Pulp & Paper, 8s 1941	108	110
Stevens & Thompson Paper, 6s 1942	93	95
St. Anne Paper, 6½s 1946	99	101
St. Croix Paper, 5s 1926-37	95	98*
St. Regis Paper Serial, 6½s 1926-35	99½	101
Tait Paper & Color Industries, 6s 1934	90	95
Taggart Bros. Co., 6s 1944	95	97
Ticonderoga Pulp & Paper, 5s 1930	94	98
Ticonderoga Pulp & Paper, 6s 1940	99	101
Warren (The S. D.) Company, 6s 1945	99	101
Wotab Paper, 6½s 1943	102	...
Westfield River Paper, 7s 1926-43	91	...
Whitaker Paper, 7s 1942	106	108

STOCKS	BID	ASKED
American Box Board, Pfd.	8	10
American Box Board, Com.	8	10
Am. Tissue Mills, 7% Pfd.	90	93
British Columbia P. & P., Pfd.	54	58
Brompton Pulp & Paper, 8% Pfd.	100	102
Brown Corpn., 7% Pfd.	100	104
Champion Fibre, 7% Pfd.	106	112
Diem & Wing, 7% Cum. Pfd.	90	...
Eastern Mfg. Co., 1st Pfd.	28	33
Great Northern Paper, Com.	70	75
Hammermill Paper, 7% Pfd.	105	110
Hinde & Dauch, Com.	135	...
Hinde & Dauch, Pfd.	100	...
Holyoke Card & Paper	160	None
Marathon Paper Mills, Com.	125	...
Midwest Box Co., Pfd. 8%	94	98
Midwest Box Co., Pfd. 6%	92	97
Louis De Jonge Co., 7% Pfd.	93	96
Oxford Papers, Com.	160	170
Oxford Paper Co., Pfd.	105	108
Penobscot Chemical Fibre, Com.	65	75*
Richardson, 7% Pfd.	160	...
Rubberoid	74	77
Seaman Container, Class B (par $1)	1	None Off.
Seaman Paper Co.	Wanted	None Off.
St. Croix Paper	150	170
St. Regis Paper Co., 7% Cum. Pfd.	101½	104½
Westfield River Paper Co., 1st Pfd.	Wanted	None Off.
West Virginia Pulp and Paper, Com.	50	55
West Virginia Pulp & Paper, Pfd.	101	103
Whittaker Paper, 7% Cum. Pfd.	98	103

* Nominal.

Paper

(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	9.00	@45.00
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine Sized	8.00	@11.00
News—		
Rolls, contract	3.25	@ —
Rolls, transient	3.25	@ 3.50
Sheets	3.65	@ 3.85
Side Runs	3.00	@ 3.75
Book, Cased—		
S. & S. C.	6.35	@ 7.75
M. F.	6.25	@ 7.75
Coated and Enamel	8.00	@15.00
Lithograph	8.00	@15.00
Tissues—Per Ream—		
White No. 1	.75	@ 1.00
Anti-Tarnish	1.10	@ 1.90
Colored	1.00	@ 2.00
White No. 2	.75	@ .85
Kraft	.90	@ 1.00
Manila	.75	@ .85
Kraft—		
No. 1 Domestic	6.25	@ 6.50
No. 2 Domestic	4.50	@ 4.75
Southern	4.25	@ 4.50
Imported	6.50	@ 7.00
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.75	@ 5.25
No. 2 Wood	4.00	@ 4.50
Butchers	3.75	@ 4.25
Fibre Papers—		
No. 1 Fibre	5.00	@ 5.50
No. 2 Fibre	4.75	@ 5.25
Common Bogus	2.75	@ 3.00
Screenings	3.00	@ 3.25
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs.	13.00	@16.00
Bleached, basis 20 lbs.	15.00	@16.00

(Delivered New York)

Boards—per ton—		
News	47.50	@50.00
Straw	53.50	@57.50
Chip	45.00	@47.50
Binders' Boards	70.00	@75.00
Sgl. Mla. Ll. Chip.	57.50	@60.00
Wood Pulp	80.00	@85.00
Container	67.50	@72.50

Mechanical Pulp

(Ex-Dock)

No. 1 Imported—		
Moist	28.00	@30.00
Dry	32.00	@34.00

(F. o. b. Mill)

No. 1 Domestic	26.00	@30.00
Screenings	15.00	@20.00

Chemical Pulp

(Ex-Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	3.40	@ 4.25
Easy Bleaching	2.65	@ 2.80
No. 1 strong unbleached	2.50	@ 2.65
Mitscherlich unbleached	2.60	@ 3.25
No. 2 strong unbleached	2.30	@ 2.40
No. 1 Kraft	2.55	@ 2.75
No. 2 Kraft	2.40	@ 2.50
Sulphate—		
Bleached	3.65	@ 3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	3.20	@ 4.75
Easy Bleaching Sulphite	2.60	@ 2.75
News Sulphite	2.40	@ 2.65
Mitscherlich	3.25	@ 3.70
Kraft (Domestic)	2.60	@ 3.30
Soda Bleached	3.25	@ 3.50
Sulphate Screenings—		
Coarse	.75	@ .85
Refined	1.50	@ 1.85

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	11.75	@12.25
New White, No. 2	8.00	@ 8.50
Silesias No. 1	7.25	@ 7.75
New Unbleached	10.50	@11.00
Washables	4.25	@ 4.75
Fancy	5.50	@ 6.00
Blue Overall	6.75	@ 7.25
New Blue Prints	5.25	@ 5.50
New Soft Blacks	5.25	@ 5.75
Mixed Khaki Cuttings	4.75	@ 5.25
Pink Corset Cuttings	8.00	@ 8.50
O. D. Khaki Cuttings	5.25	@ 5.75
Men's Corduroy	3.75	@ 4.25
New Mixed Blacks	3.50	@ 3.75

Old Rags

White, No. 1—		
Repacked	5.50	@ 6.00
Miscellaneous	4.50	@ 5.00
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.50	@ 2.75
St. Soiled, White	2.00	@ 2.15
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.75	@ 2.00
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.70	@ 1.80
No. 1	1.70	@ 1.80
No. 2	1.50	@ 1.60
No. 3	1.30	@ 1.40
No. 4	1.25	@ 1.35
No. 5A	.95	@ 1.05

Foreign Rags

New Light Silesias	7.00	@ 7.50
Light Flannelettes	7.50	@ 8.00
Unbleached Cottons	10.00	@11.00
New White Cuttings	10.50	@11.50
New Light Oxfords	7.00	@ 7.50
New Light Prints	5.50	@ 6.50
New Mixed Cuttings	3.00	@ 3.50
New Dark Cuttings	2.75	@ 3.25
No. 1 White Linens	7.25	@ 8.00
No. 2 White Linens	5.50	@ 6.25
No. 3 White Linens	4.50	@ 5.00
No. 4 White Linens	3.00	@ 3.50
Old Extra Light Prints	2.75	@ 3.25
Ord. Light Prints	2.25	@ 2.50
Med. Light Prints	1.90	@ 2.10
Dutch Blue Cottons	2.25	@ 2.50
German Blue Linens	2.50	@ 2.75
German Blue Cottons	2.00	@ 2.25
Checks and Blues	1.75	@ 2.00
Lindsay Garments	1.85	@ 1.95
Dark Cottons	1.65	@ 1.70
Shoppery	1.55	@ 1.60
French Blues	2.25	@ 2.50

Old Rope and Bagging

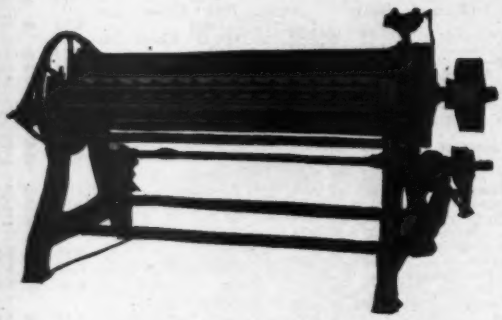
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.65	@ 1.75
Domestic	1.70	@ 1.75
Wool Tares, light	1.60	@ 1.65
Wool Tares, heavy	1.60	@ 1.65
Bright Bagging	1.60	@ 1.65
Small Mixed Rope	1.25	@ 1.40
Manila Rope—		
Foreign	3.00	@ 3.10
Domestic	3.75	@ 4.00
New Burlap Cut	2.75	@ 3.00
Hessian Jute Threads—		
Foreign	3.50	@ 4.00
Domestic	3.25	@ 3.50

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, White, No. 1	3.40	@ 3.65
Hard, White, No. 2	2.90	@ 3.05
Soft, White, No. 1	2.75	@ 2.90
Flat Stock—		
Stitchless	1.40	@ 1.45
Overissue Mag.	1.40	@ 1.45
Solid Flat Book	1.30	@ 1.35
Crumpled No. 1	1.05	@ 1.10
Solid Book Ledger	1.90	@ 2.10
Ledger Stock	1.70	@ 1.75
New B. B. Chips	.65	@ .75
Manilas—		
New Env. Cut	2.40	@ 2.60
New Cuttings	1.60	@ 1.85
Extra No. 1 old	1.25	@ 1.35
Print	.85	@ .95
Container	.70	@ .80
Bogus Wrapper	.75	@ .85
Old Kraft Machine Compressed bales	1.95	@ 2.05
News—		
No. 1 White News	1.70	@ 1.80
Strictly Overissue	.80	@ .90
Strictly Folded	.55	@ .60
No. 1 Mixed Paper	.45	@ .50
Common paper	.30	@ .35



Dietz Latest Improved Toilet and Paper Towel Perforating, Slitting and Rewinding Machines

Designed for HIGH SPEED, PRECISION and ECONOMY, SELF-ADJUSTING, even tension, safe and easy to operate. For QUALITY and QUANTITY of production, these machines surpass all others.

BREAKS IN PAPER and loss of time through stoppage of machine reduced to a MINIMUM. Best STEEL KNIVES and Perforating Blades. IMPROVED Self-oiling FRICTION DRIVE PULLEY.

ROLLS CAN BE MADE WITH OR WITHOUT PERFORATIONS QUICKLY ADJUSTED FOR MAKING SANITARY PAPER TOWELS. Can be equipped with Drum Winding Attachment for producing hard wound CREPE toilet or paper towel rolls.

Also Builders of The Dietz Latest Improved Patented Automatic Tube Machines

FOR MAKING

Paper Cores for Toilet Paper Rolls and Towel Rolls Directly from the Roll

Capable of producing 3,600 wire-stitched toilet tubes per hour directly from the roll. TOWEL TUBES are made at the rate of 1,800 per hour directly from the roll.

Substantially built and fully guaranteed. Bearings are bronze-bushed, insuring long life to machines.

Manufacturers also of Toilet Roll Tighteners, Drop Roll Slitting Machines, Rotary Card Cutting Machines, which can be furnished with Collating Attachments, Slitting and Rewinding Machines, Photo Mount Beveling Machines. Punch Presses for Playing Cards, etc. Special Machinery built from blue prints.

Patented

THE DIETZ MACHINE WORKS

126-128 W. Fontain St., bet. Front and Second Sts., Philadelphia, Pa., U. S. A.

Double headed motor with two LENIX Drives on two heaters in the mill of the Daily News Paper Company, North Tonawanda, N. Y.

FOR NEW BELT DRIVES

If you are planning new equipment, let us know the company from whom you are buying. We'll arrange for you to have LENIX Drives installed with the equipment. By so doing, you can save considerable on floor space.

What A Big Improvement This Makes

WHAT a big improvement in the operation of belt driven machines results from that added amount of belt-pulley contact.

Belt slippage is avoided
Proper belt tension is maintained
More power is transmitted
Bearings pressure is minimized.
Belt life is prolonged.

. . . all of which result when belt drives are equipped with the LENIX Short Center Belt Drive.

Check over the drives in your plant—existing and proposed. If they are not LENIX equipped, make them so. Operating costs will be lowered.

Write for our recommendations.

F. L. SMIDTH & COMPANY

INCORPORATED 1895

ENGINEERS

50 CHURCH ST. NEW YORK, N. Y

The LENIX *Drive*

Twines

(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrapping, 3-6 Ply—			
No. 1	.21	@	.23
No. 2	.20	@	.22
Tube Rope—			
4-ply and larger	.18	@	.19
Fine Tube Yarn—			
5-ply and larger	.23	@	.27
4-ply	.24	@	.28
3-ply	.26	@	.30
Unfinished India—			
Basis	.16	@	.17
Paper Makers Twine			
Balls	.13	@	.15
Box Twine, 2-3 ply	.17	@	.19
Jute Rope	.21	@	.23
Ameri. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.18	@	.20
No. 2 Basis	.16	@	.18
Sisal Lath Yarn—			
No. 1	.16	@	.18
No. 2	.14	@	.16
Manila Rope	.24	@	.26

CHICAGO

All Rag Bond	.35	@	.41
No. 1 Rag Bond	.25	@	.35
No. 2 Rag Bond	.14	@	.25
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¼	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05½	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
News—Roll, mill	.03½	@	.04¼
News—Sheets, mill	.03¾	@	.04¾
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¾
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	.05¾	@	.06¼
Southern Kraft	.04½	@	.05
No. 2 Kraft	.05	@	.05¼
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½
Boards, per ton— (Delivered Central Territory)			
Plain Chip	45.00	@	—
Solid News	47.50	@	—
Manila Lined Chip	55.00	@	—
Container Lined— (Delivered Central Territory)			
85 Test	65.00	@	70.00
100 Test	70.00	@	—

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 Hard White.	2.80	@	2.90
White Env. Cuttings	3.60	@	3.70
No. 1 Soft Shavings.	2.50	@	2.60
No. 1 Mixed	1.00	@	1.05
No. 2 Mixed	.90	@	1.00
Ledger & Writings	1.55	@	1.65
Solid Books	1.20	@	1.30
Blanks	1.70	@	1.80
Krafts	1.90	@	2.00
New Kraft Cuts	2.25	@	2.35
Manila Envelope Cuttings	1.95	@	2.10
Ex. No. 1 Manila	1.55	@	1.65
Print Manila	.90	@	1.00
Folded News (overissue)	.60	@	.70
Old Newspapers—			
No. 1	.65	@	.75
No. 2	.60	@	.65
Mixed Papers—			
No. 1	.70	@	.80
Roofing Stocks— (F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.07	@	.40
Ledgers	.11	@	.40
Writings—			
Superfine	.13	@	.18
Extra fine	—	@	.22
Fine	.20	@	.26½
Fine, No. 2	.16	@	.25
Fine, No. 3	.12	@	.20
Book, M. F.	.06	@	.07
Book, S. S. & C.	.06	@	.07½
Book, Coated	.11	@	.16
Coated Lithograph	.09	@	.12
Label	.09	@	.12
News	.03¾	@	.04
No. 1 Jute Manila	.08½	@	.09
Manila Sul., No. 1	.04½	@	.06
Manila, No. 2	.04	@	.04½
No. 2 Kraft	.05¼	@	.05½
No. 1 Kraft	.06	@	.06¼
Common Bogus	.02¾	@	—
Straw Board	60.00	@	65.00
News Board	47.50	@	50.00
Chip Board	42.50	@	45.00
Wood Pulp Board	4.50	@	5.00
(Carload Lots)			
Binder Boards—			
No. 1, per ton	85.00	@	90.00
No. 2, per ton	70.00	@	75.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	66.00	@	68.00
Slaters	70.00	@	72.00
Best Tarred, 1-ply (per roll)	.85	@	1.95
Best Tarred, 2-ply (per roll)	1.55	@	1.70
Best Tarred, 3-ply	2.10	@	2.15
No. 1 Mixed Paper	.65	@	.70

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.11½	@	.12
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07½	@	.08
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable	.04	@	.04½
Fancy	.05½	@	.06
Cottons—according to grades—			
Blue Overall	.07½	@	.08
New Blue	—	@	.04
New Black Soft	.05½	@	.06
New Light Seconds	.03	@	.03½
Khaki Cuttings	.04½	@	.05
Corduroy	.03	@	.03¾
New Canvas	.08	@	.09½
New Black Mixed	.05	@	.05½

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.75	@	2.00
Domestic	1.75	@	2.00
Manila Rope	3.50	@	4.00
Sisal Rope	1.25	@	2.00
Mixed Rope	1.10	@	1.25
Scrap Burlaps	1.50	@	1.75
Wool Tares, heavy	3.00	@	3.50
Mixed Strings	1.25	@	1.35
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	—	@	2.50

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	3.50	@	3.60
No. 2 Hard White	3.00	@	3.25
No. 1 Soft White	2.50	@	2.75
No. 2 Soft White	1.90	@	2.00
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	.90	@	1.00
Solid Ledger Stock	1.90	@	2.00
Writing Paper	1.75	@	1.85
No. 1 Books, heavy	1.30	@	1.35
No. 2 Books, light	.85	@	.90
No. 1 New Manila	2.40	@	2.50
No. 1 Old Manila	1.50	@	1.60
Print Manila	1.00	@	1.10
Container Manila	.90	@	1.00
Old Kraft	2.00	@	2.20
Common Paper	.55	@	.60
No. 1 Mixed Paper	.60	@	.75
Straw Board, Chip	.65	@	.75
Binders Board, Chip	.65	@	.75
Overissue News	.80	@	.90
Old Newspaper	.60	@	.70

Domestic Rags (Old)

White, No. 1—			
Repacked	4.50	@	5.25
Miscellaneous	3.50	@	4.00
White, No. 2—			
Repacked	.02¼	@	.02¾
Miscellaneous	.02	@	.02¼
Thirds and Blues—			
Repacked	2.50	@	2.75
Miscellaneous	1.60	@	1.75
Black Stockings	3.50	@	3.75
Roofing Stock—			
No. 1	1.75	@	1.80

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.07¼	@	.15
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.07	@	.20
Superfines	.11	@	.31
News	.03½	@	.04
Book, Super	.06	@	.09
Book, M. F.	.05¾	@	.08½
Book, Coated	.08½	@	.20
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.05½	@	.06½
No. 2 Kraft	.04¼	@	.05
Common Bogus	.02¼	@	.02¾
Delivered New England points			
Straw Board, rolls	.009		57.50
Straw Board in Sheets, basis 35s to 70s	.54.50	@	55.00
Filled News Board			47.50
Chip Board			45.00
Single Manila Pulp lined board	55.00	@	60.00
Single White, patent coated board bender	75.00	@	82.50
Wood Pulp Board	80.00	@	85.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White.	2.75	@	3.10
No. 2 Hard White.	2.60	@	2.90
No. 1 Soft White	2.60	@	—
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	2.25	@	—
No. 1 Books, Heavy	1.50	@	1.60
No. 1 Books, Light	—	@	1.15
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	1.25	@	1.35
White Blank News	1.50	@	—
Old Kraft	2.10	@	—
Print Manila	.70	@	.80
No. 1 Mixed Paper	.45	@	.50
Overissue News	.70	@	.80
Old Newspapers	.50	@	.60
Box Board, Chip	.65	@	—

Bagging

(Price f. o. b. Boston)

Gunny No. 1—			
Foreign	1.40	@	1.50
Domestic	1.50	@	1.60
Manila Rope and Strings—			
Foreign	—	@	3.00
Domestic	—	@	3.50
Mixed Strings	.90	@	1.00
Scrap Burlaps	1.37½	@	1.50
Wool Tares, heavy	—	@	1.50
New Burlap Cutting	2.25	@	2.37½

Domestic Rags (New)

(Price f. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.11	@	.11½
Silesias, No. 1	.07	@	.07½
New Unbleached	.09½	@	.10
Fancy	.05	@	.05½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.07	@	.07½
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04¼	@	.05¾
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)

(Price f. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	5.50	@	5.75
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Thirds and Blues—			
Repacked	2.00	@	2.12½
Miscellaneous	1.75	@	1.90
Roofing Stock—			
No. 1	1.70	@	—
No. 2	1.50	@	—
No. 3	1.10	@	—
No. 4	1.10	@	—
No. 5A	.90	@	1.00
B	.80	@	.90
C	.80	@	.90

Foreign Rags

(F. o. b. Boston)

Dark Cottons	—	@	1.55
New No. 1 Shirt Cuttings	11.00	@	11.50
Dutch Blues	2.00	@	—
Lace Curtains	5.25	@	5.50
New Checks & Blues	4.50	@	4.65
Old Fustians	1.80	@	—

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¾	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09¼	@	.10
News f. o. b. Mills—			
Rolls (carloads)	3.25	@	—
Sheets (carloads)	3.75	@	—
Sheets (2 tons or over)	4.00	@	—
Book—			
No. 1 M. F. (carloads)	7.75	@	—
No. 2 M. F. (carloads)	7.50	@	—
No. 3 M. F. (carloads)	7.25	@	—
No. 1 S. C. (carloads)	8.25	@	—
No. 2 S. C. (carloads)	8.00	@	—
No. 3 S. C. (carloads)	7.75	@	—
No. 1 Coated and Litho	14.50	@	—
No. 2 Coated and Litho	13.50	@	—
No. 3 Coated and Litho	12.75	@	—
Coated tinted	.15	@	—
Wrapping—			
Rag Brown	4.85	@	—
White Rag	5.25	@	—
"B" Manila	5.65	@	—
No. 1 Manila	6.65	@	—
Fiber	6.65	@	—
Kraft, M. F.	7.20	@	—
M. G.	7.35	@	—

Pulp

(F. o. b. Mill)

Ground wood	31.00	@	—
Sulphite easy bleaching	62.50	@	—
Sulphite news grade	55.00	@	58.00
Sulphite, bleached	76.00	@	—
Sulphate	65.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	3.00	@	—
White Blk, News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.25	@	—
Light and Crumpled Book Stock	1.10	@	—
Ledgers and Writings	1.50	@	—
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.80	@	—
Strictly Folded	.80	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.12	@	.12¾
Fancy Shirt Cuttings	.05	@	.06¼

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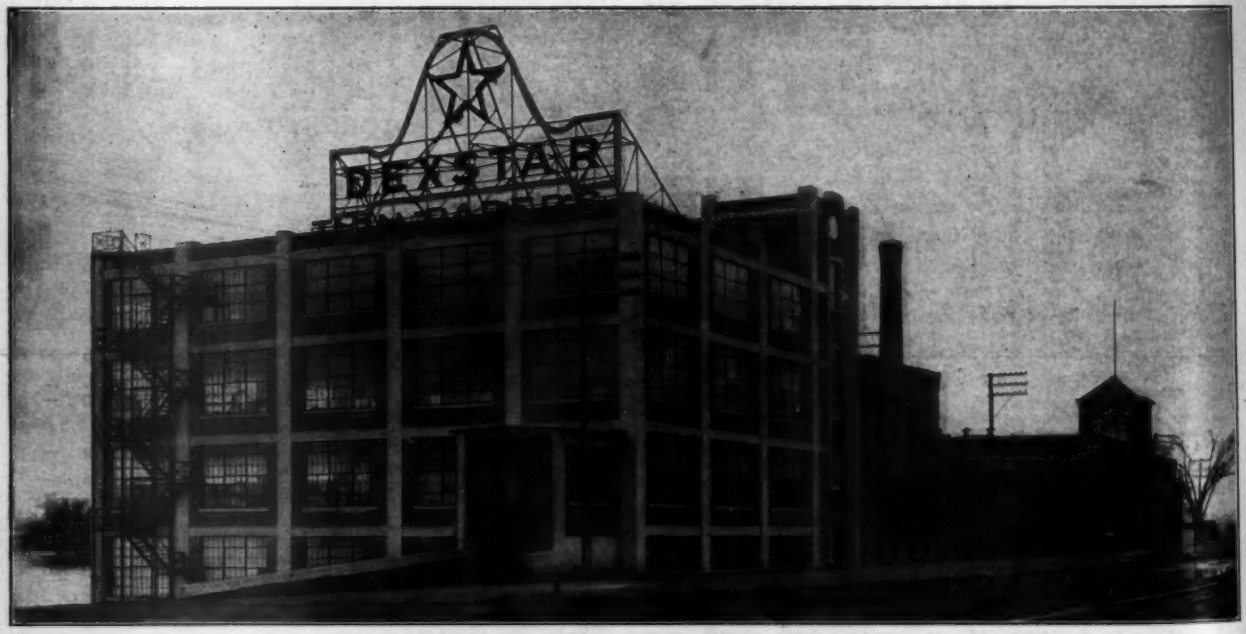

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